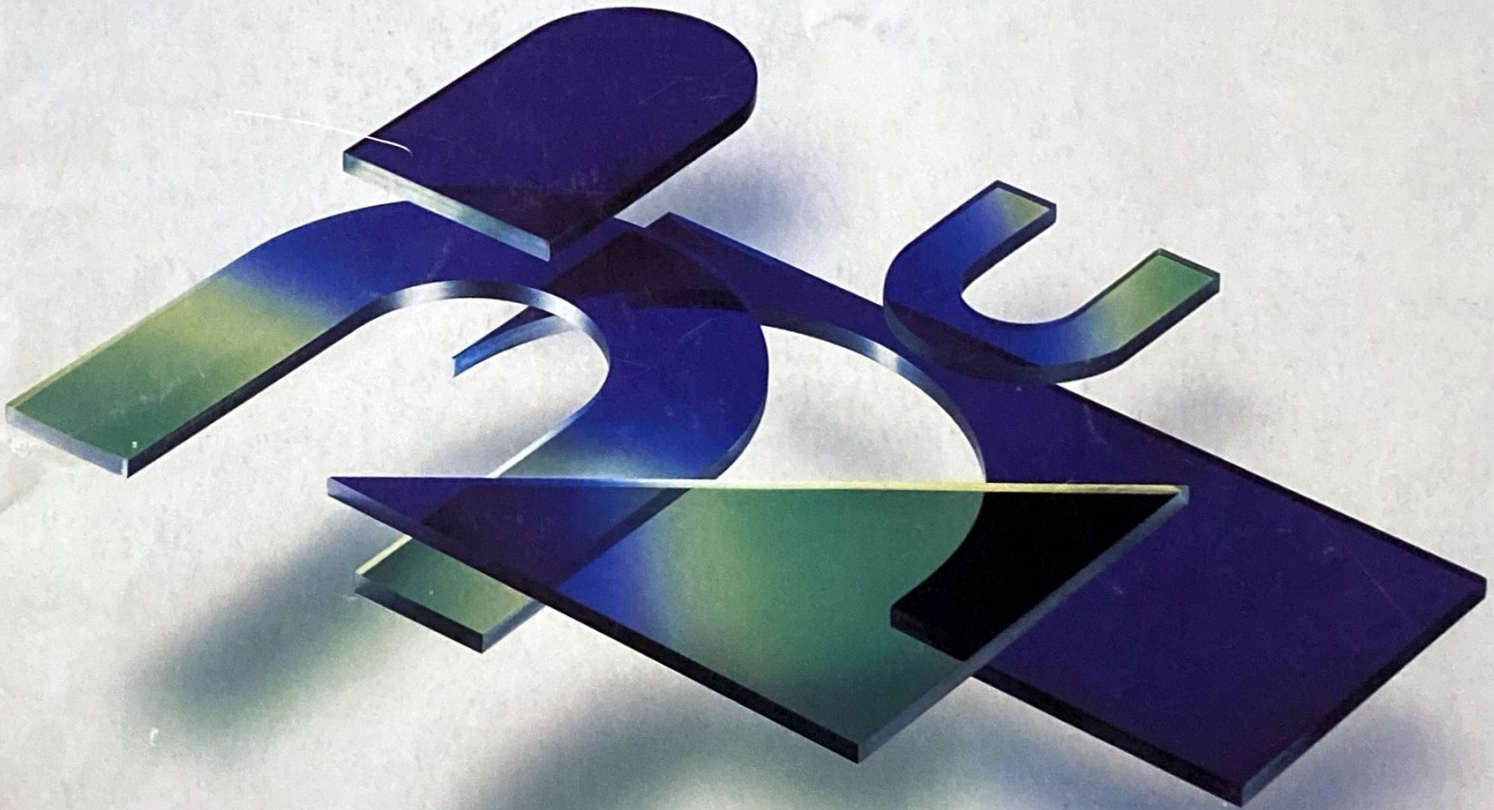
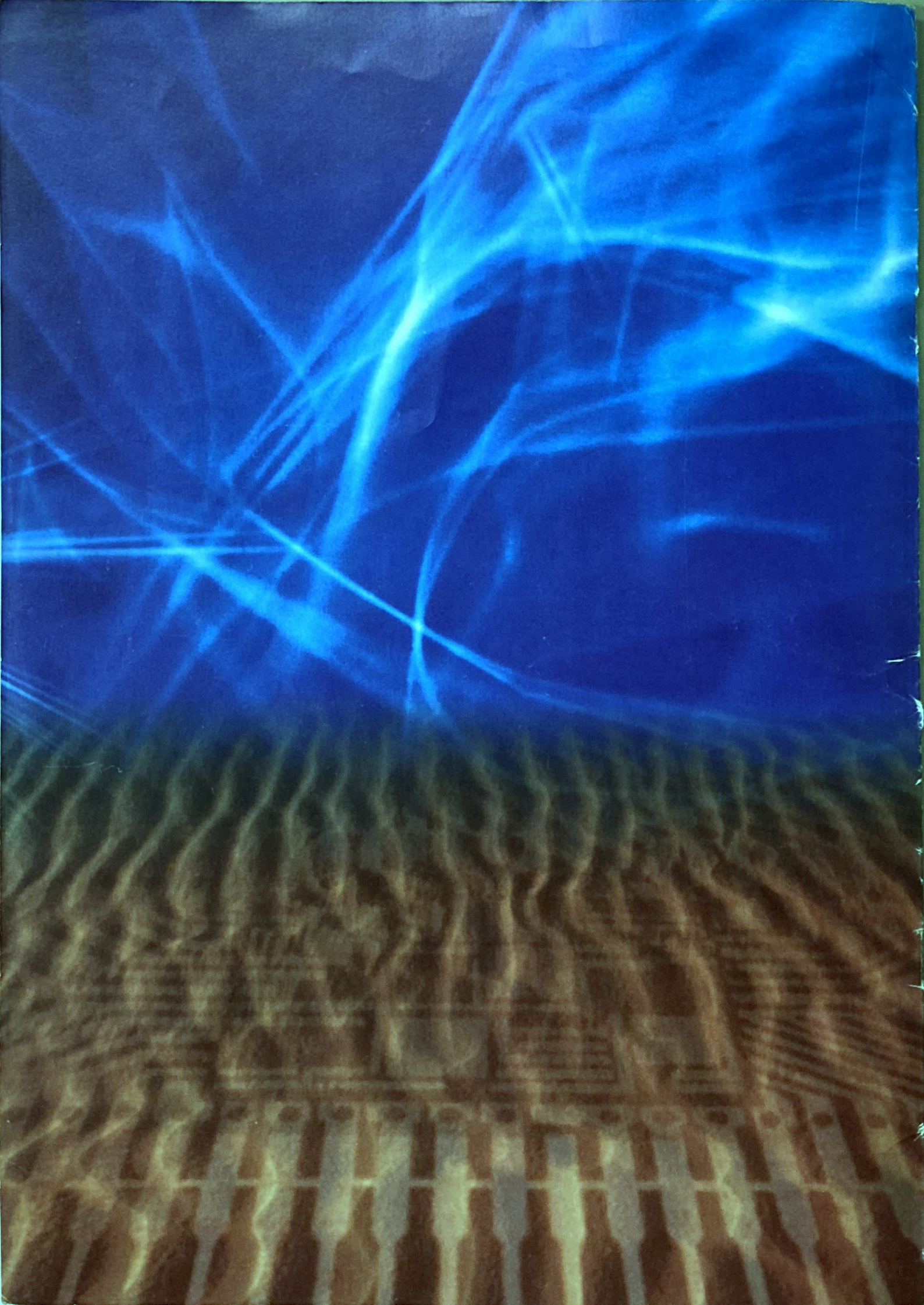
RiscPC



Acorn



Risc PC from Acorn

RISC processing is now widely recognised as the way of the future. RISC (Reduced Instruction Set Computing) processors are more efficient than their competitors, and offer the levels of performance, now and into the future, which the world's most creative software developers are exploiting to bring to the users unparalleled capabilities in true interaction with, and exploitation of, technology.

Risc PC from Acorn offers all the traditional strengths of **RISC** processing, and a great deal more - at a remarkably **affordable** price. Risc PC offers immensely **powerful** products to meet today's requirements. It allows increasing **interconnection** and **interworking** with other technologies and products. And Risc PC's uniquely modular design and architecture provides virtually unlimited potential for **upgrading** to and benefiting from the technologies of **the future**.

As the **world's leading supplier** of 32-bit RISC-based personal computers for over seven years, Acorn is unique in its experience of developing and implementing affordable, robust RISC-based solutions. Solutions which, as other manufacturers are now realising, point the way forward for personal computing.

Risc PC demonstrates Acorn's unrivalled knowledge and understanding of the needs of the educational, individual and professional users who make up Acorn's chosen markets. Over the past seven years Acorn has sold hundreds of thousands of RISC-based systems, enabling literally millions of users to experience and enjoy the benefits of **RISC OS**, Acorn's powerful yet easy-to-use operating system.

Risc PC opens the door on **a wealth of software**. Thousands of existing RISC OS titles, together with software written for DOS/Windows, are available to Risc PC users. And Risc PC's phenomenal capabilities offer software developers an elegant and supportive development platform, paving the way for a whole new generation of multimedia software development.

Risc PC is further proof of Acorn's world class technological skills in designing complete, innovative systems at prices its customers can afford.

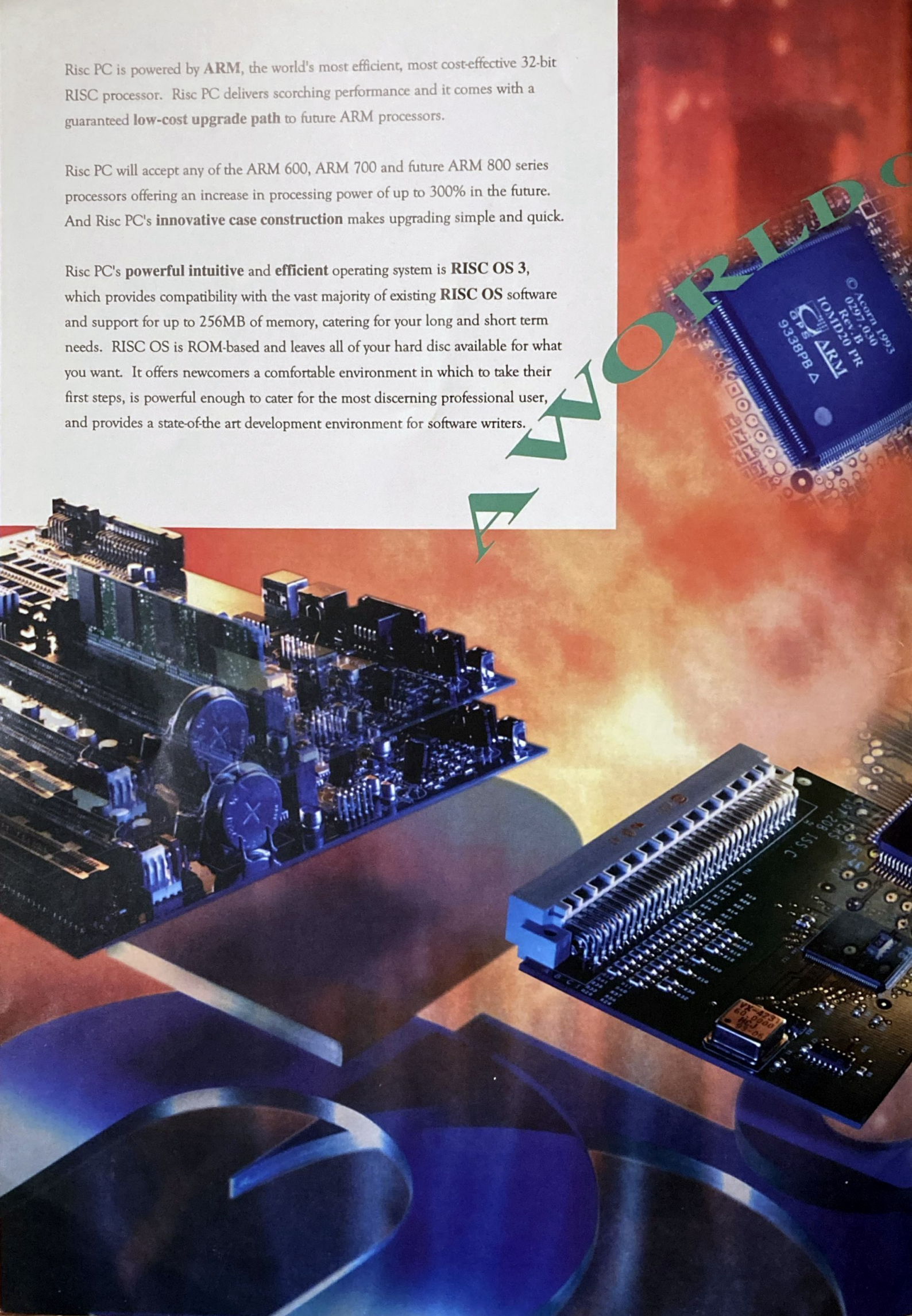
Welcome to Risc PC. The new generation of personal computing.

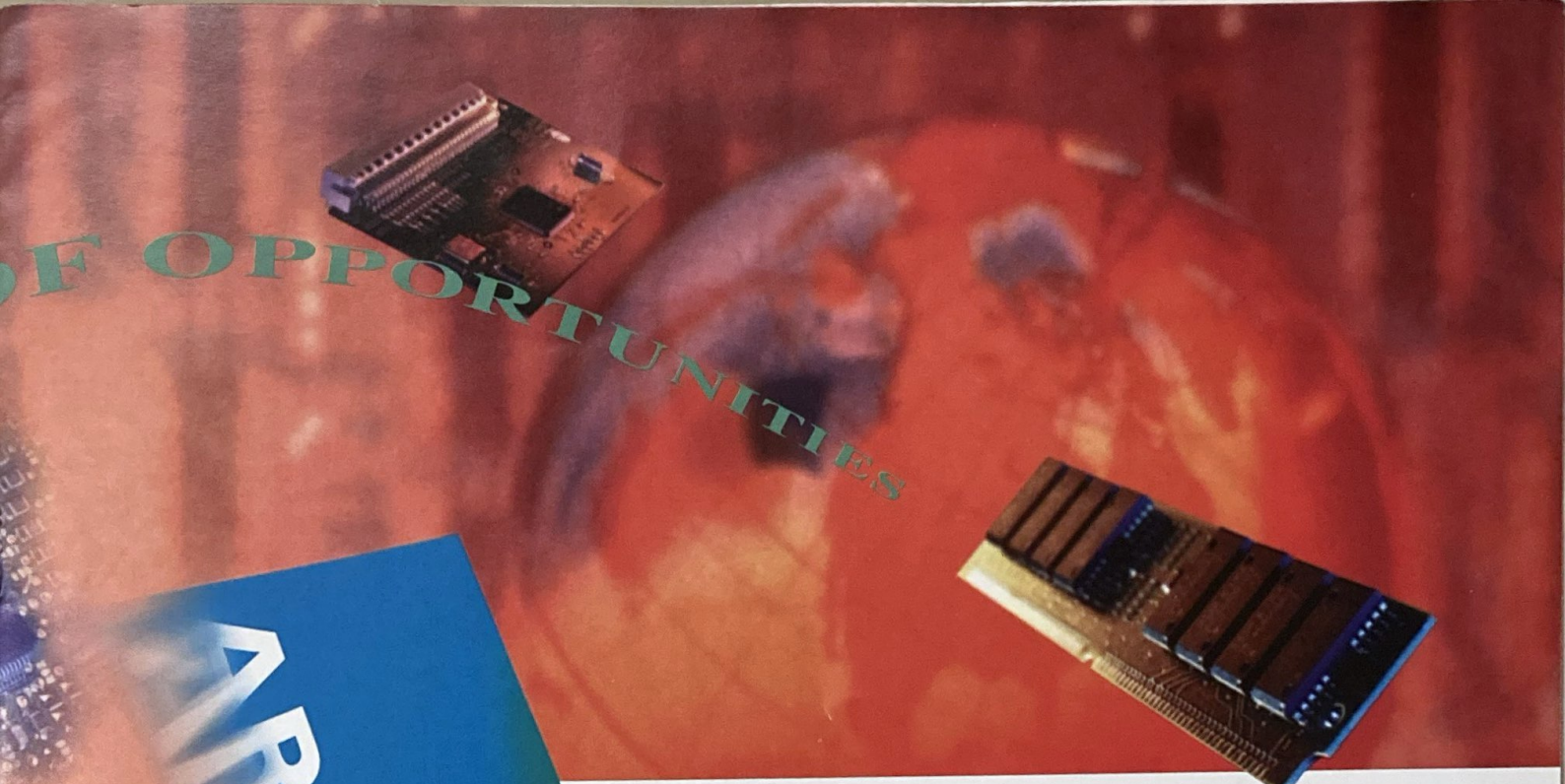
Risc PC is powered by **ARM**, the world's most efficient, most cost-effective 32-bit RISC processor. Risc PC delivers scorching performance and it comes with a guaranteed **low-cost upgrade path** to future ARM processors.

Risc PC will accept any of the ARM 600, ARM 700 and future ARM 800 series processors offering an increase in processing power of up to 300% in the future. And Risc PC's **innovative case construction** makes upgrading simple and quick.

Risc PC's **powerful intuitive** and **efficient** operating system is **RISC OS 3**, which provides compatibility with the vast majority of existing **RISC OS** software and support for up to 256MB of memory, catering for your long and short term needs. RISC OS is ROM-based and leaves all of your hard disc available for what you want. It offers newcomers a comfortable environment in which to take their first steps, is powerful enough to cater for the most discerning professional user, and provides a state-of-the art development environment for software writers.

A WORLD





DOS/Windows applications? No problem. Risc PC's radical Open Bus capability allows a second processor to be fitted and utilise the memory and other facilities of Risc PC. So, fit a 486 or Pentium alongside the Acorn RISC chip, for the perfect blend of **outstanding performance** and DOS/Windows capability.[1] You can run Risc PC with RISC OS, or as a PC, or multi-task between the two from a RISC OS desktop.

Risc PC offers you technology with a difference. All the advantages of an advanced RISC operating system, with the assurance of broad-based system compatibility.

Why Risc PC from Acorn?

- **The world's most cost- effective, efficient 32-bit RISC computers.**
- **Low cost processor upgrade strategy, protecting your investment today and into the future.**
- **RISC OS - a powerful, multi-tasking operating sytem, tried and tested by millions of users.**
- **A wealth of powerful applications software from personal productivity tools to true multimedia.**
- **Low cost access to DOS and Windows applications.**
- **Lightning fast manipulation of still and moving images.**
- **High-performance multi-channel stereo sound as standard on all models.**
- **Modular and upgradeable computer systems that grow with your needs.**

[1] The first card to exploit this second processor capability,providing high performance 80486 compatibility, will be available from 4th quarter 1994.

Risc PC has been designed as a totally **modular** system. Risc PC couples **innovative** mechanical and electrical design, with virtually unlimited upgrade capability. So you can start with a basic configuration, and gradually expand - confident that your investment will not be wasted at any stage.

Risc PC creates a new standard in design, which even extends to the case. Clean lines and minimal screws make the case attractive and practical. Every Risc PC case has been built using the same **industrial strength** plastic used for crash helmets! The innovative design enables upgrading to be carried out quickly and easily.

Risc PC's high performance is reflected in its sound system. Eight **stereo sound** channels are offered as standard on all models.

And in the area of **graphics**, both in terms of speed and quality, Risc PC leaves the competition standing.

DELIVERING TH

- **Risc PC still picture manipulation six times faster than on a typical 66mHz 486DX2**
- **True 24-bit colour delivering 16 million colours**
- **Full PhotoCD capability**
- **Photographic-quality image editing**
- **Superb image manipulation and special effects**
- **New full scale 1600x1200 resolution desktops**
- **Smooth full motion video with Acorn Replay, achieved on the widest range of configurations**

Risc PC takes all the standard computing tasks, such as word processing, databasing and spreadsheets, in its stride - as you would expect from a high performance personal computer. But as today's users increasingly look for more powerful, flexible and sophisticated solutions, Risc PC offers a world of capabilities.

Risc PC Multiplatform

Risc PC's second processor slot allows you to plug in a range of complementary processors. With Risc PC, you can enjoy true multiplatform operation. With the addition of a CD-ROM drive, it is also possible to exploit CD-ROMs under other operating environments. Run as a RISC OS system, run as a PC, or multi-task from a RISC OS desktop.

Risc PC for Interworking and Networking

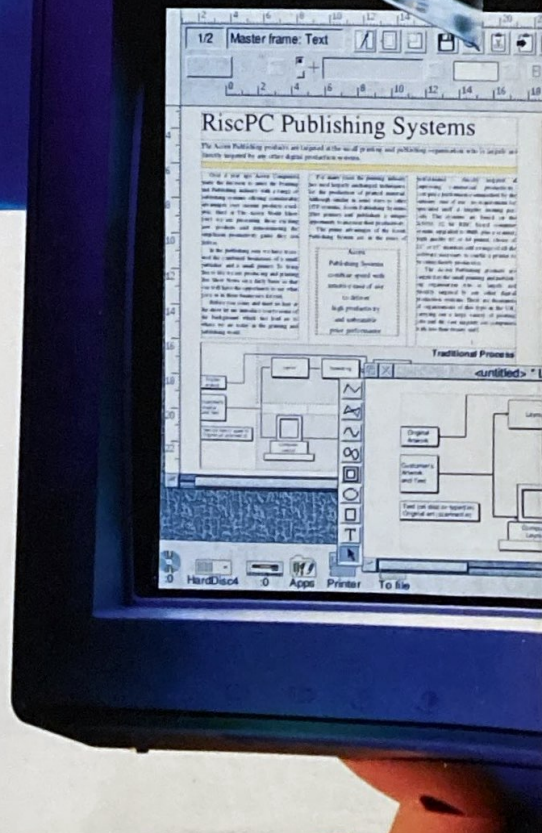
The Risc PC motherboard has a new dedicated network slot, ensuring easy integration with industry standard Ethernet networks. In addition, for server applications, the DEBI and Open Bus interface provides extremely fast connections to support the most demanding server -orientated applications. Risc PC supports all the industry standard protocols, TCP/IP, NFS and X Windows as well as ACCESS, Acorn's easy-to-use and peer-to-peer networking capability.

Risc PC for Multimedia

Every model in the Risc PC range comes with true multimedia capability. Risc PC has more than enough RAM capability to load and manipulate the largest full-colour images, and combine them with text, graphics, video and sound. Risc PC is ready to receive an integral CD-ROM drive, providing Kodak's Photo CD as part of the package. And with Full Motion Video on Acorn Replay, and eight channels of stereo sound built into each model, Risc PC demonstrates the full potential of multimedia in every sense.

Risc PC for Graphics

Risc PC offers professional graphics capability with 24-bit colour, 16 million colours on screen, full size desktops (1600 x 1200), lightning speed re-draw capability and access to fast direct laser printers and industry standard output devices such as imagesetters. RISC OS supports this with a unique anti-aliased outline font system, allowing crystal clear definition whatever the text or image size, ideal for anything up to and including professional printing solutions.



Key Risc PC Technical Features

GRAPHICS DISPLAY
(up to 1600 x 1200 resolution)
(up to 16 million colours)

LID

A monitor of 16 kg can be placed on top!

FIXING DEVICES (NO SCREWS!)

You can padlock the lid if you want!

ADDITIONAL SLICES
(you can have up to seven in all)

5 1/4" DRIVE BAY
(e.g.magneto optical)

3 1/2" DRIVE BAY

FIRST SLICE

A Base Machine contains one slice

DEBI CARDS GO IN THROUGH THE BACK
(2 per slice - max 8 cards)

ROLL DOWN COVER
(keeps dust + fingers out!)

5 1/4" DRIVE BAY (e.g. CD ROM)

3 1/2" 1.6MB FLOPPY DISC DRIVE

BACKPLANE

PARALLEL PORT + SERIAL PORT
NETWORK EXPANSION behind here

OPERATING SYSTEM (RISC OS) IN ROM

ARM PROCESSOR

2nd PROCESSOR

HARD DISC

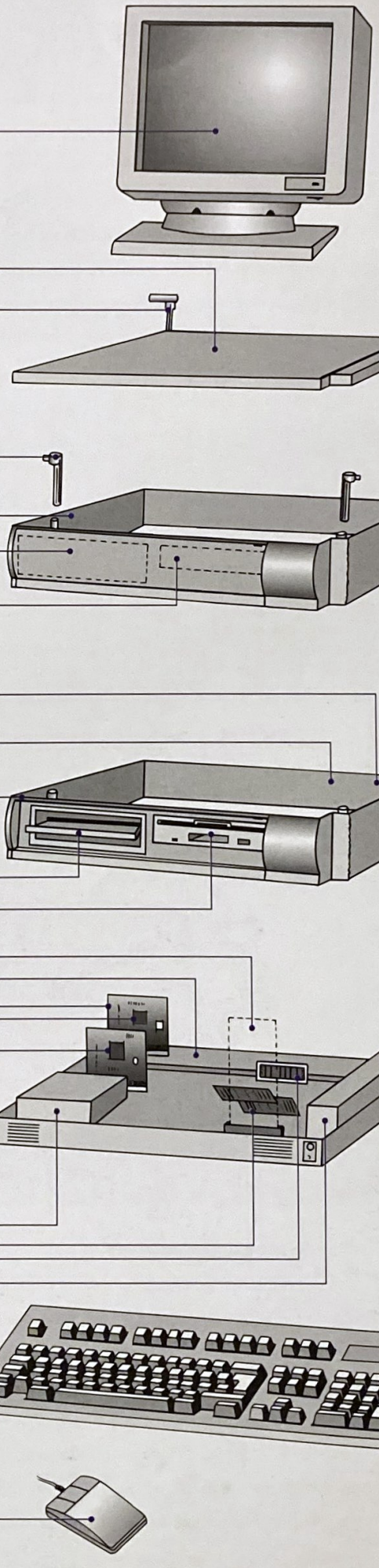
DRAM
(2 sockets - total supported 2MB-256MB)

VRAM (0,1,2MB Options)

POWER SUPPLY

KEYBOARD
(PC Compatible)

MOUSE (3 button)



For full specifications and pricing of models available in the range, see separate data sheet or contact your local dealer.

RISC PC

United Kingdom
Acorn Computers Ltd
Acorn House
Vision Park, Histon
Cambridge
CB4 4AE

Telephone (0223) 254254
Int (+44 223) 254254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 St George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394 386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26-287
Epsom, Auckland 3

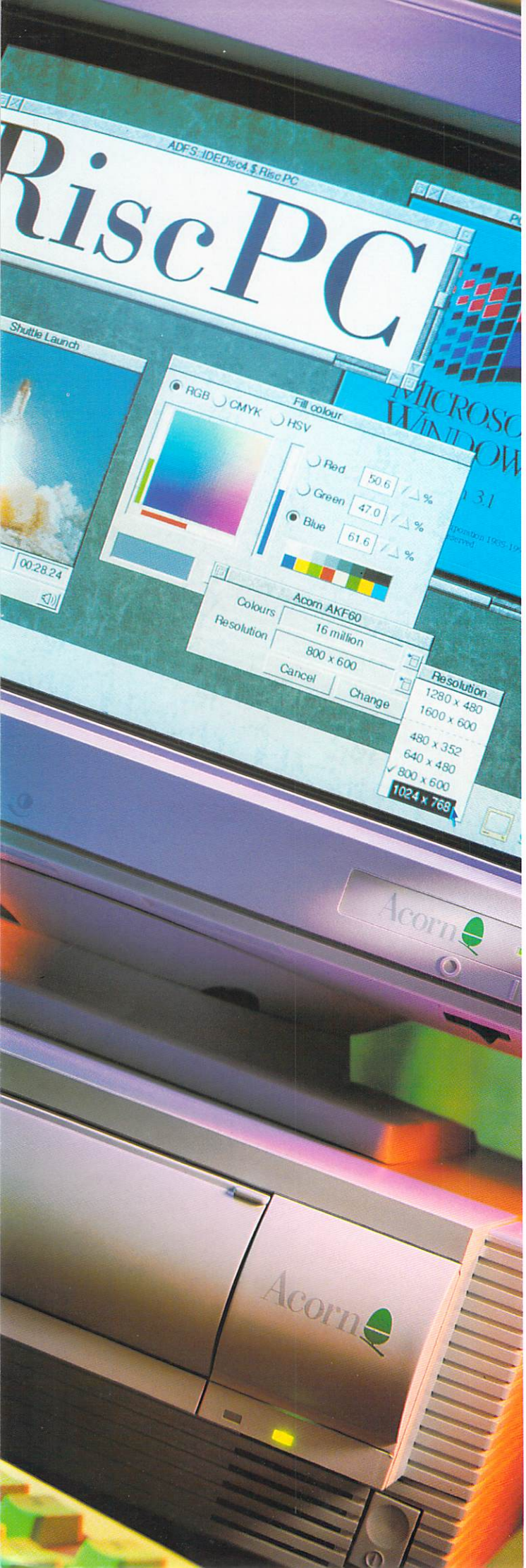
Telephone (09) 520 4049
Int +64 9520 4049
Fax (09) 520 3321
Telex A.A 178559SATCOM

Every effort has been made to ensure that the information in this brochure is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this brochure.

ACORN, the ACORN logo, Risc PC and the Risc PC logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
Microsoft and Windows are trademarks of Microsoft Corporation. All other trademarks acknowledged.
Windows screen shot ©1985-1992 Microsoft Corporation. All rights reserved.
Reprinted with permission from Microsoft Corporation.
© 1994 Acorn Computers Ltd. All Rights reserved.
APP 682 FIRST EDITION APRIL 1994

Acorn

Designed by Chameleon (UK) Limited, Manchester



RISC PC

Data Sheet Index

April 1994

1 ARM processors: a growing family

2 ARM610: first of a new series of CPUs for Acorn

3 ARM700: the next step

4 Acorn Floating Point Accelerator (FPA11)

5 Memory upgradable to 256MB

6 Multi-processor Open Bus

7 DMA Extended Bus Interface

8 PC Card: RISC OS and Windows

9 Risc PC Ethernet Card

10 Application compatibility

11 Developing for the Risc PC

12 New faster C compiler

13 Risc PC for multimedia

14 Versatile modular case design

15 SVGA in 16 million colours

16 17" SVGA Multiscan PowerSystem Monitor

17 14" SVGA Multiscan ES (EnergySaving) Monitor

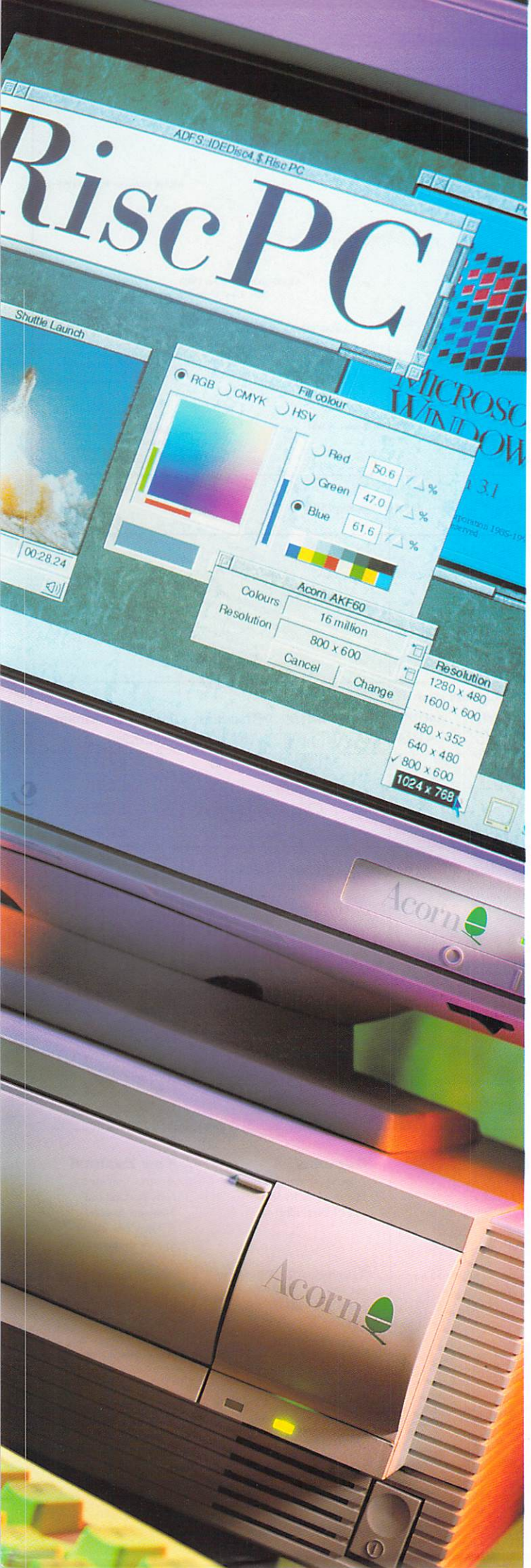
18 RISC OS 3 Version 3.5

19 RISC OS 3 Version 3.5 to 3.1 comparison

20 Risc PC Series Technical Specification

APP 710

Acorn



RISC PC

Data Sheet 1
ARM processors: a growing family

April 1994

The ARM610 is just the first in a line of ARM processors all of which will, literally, slot into the Acorn Risc PC architecture.

Following on from the ARM610 versions of the Acorn Risc PC range, will come versions using the ARM700 and beyond this, the ARM800 processors. Each of the new generations of ARM processors will improve and enhance the performance of the Risc PC architecture.

Acorn

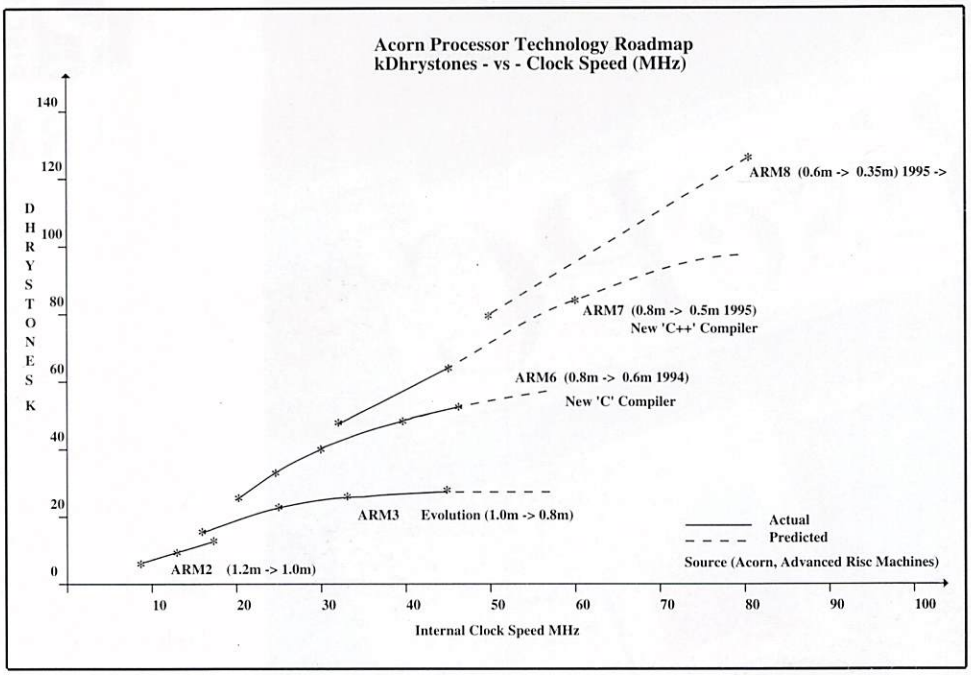
The following chart shows the expected performance benefits to be gained from each generation of ARM processor.

The Acorn Risc PC architecture has been designed to make changing and upgrading the processor as simple as possible. Each processor is supplied on a separate processor board making upgrading the Acorn Risc PC to the next generation of ARM chips as simple as pulling out one processor card and plugging in a new one.

For users who wish to upgrade their Acorn Risc PC to the next generation of processors, Acorn have guaranteed to supply upgrade cards for Acorn Risc PCs no more than three months later than the first Acorn Risc PC using a new processor is shipped.

Acorn has also taken the unusual step of guaranteeing the maximum cost* for a processor upgrade card depending on the Acorn Risc PC model owned. The following table shows the guaranteed maximum price* for a processor card when upgrading an Acorn Risc PC.

* Prices can rise by maximum of RPI



Old processor	New processor >30MHz ARM610	⩾40MHz ARM700	>40MHz ARM700	Standard ARM800	High-performance ARM800
30MHz ARM610	£75	£100	£125	£150	£175
> 30MHz ARM610	-	£75	£100	£125	£150
⩾ 40MHz ARM700	-	-	£75	£100	£125
> 40MHz ARM700	-	-	-	£75	£100

Risc PC Processor Upgrade Chart

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

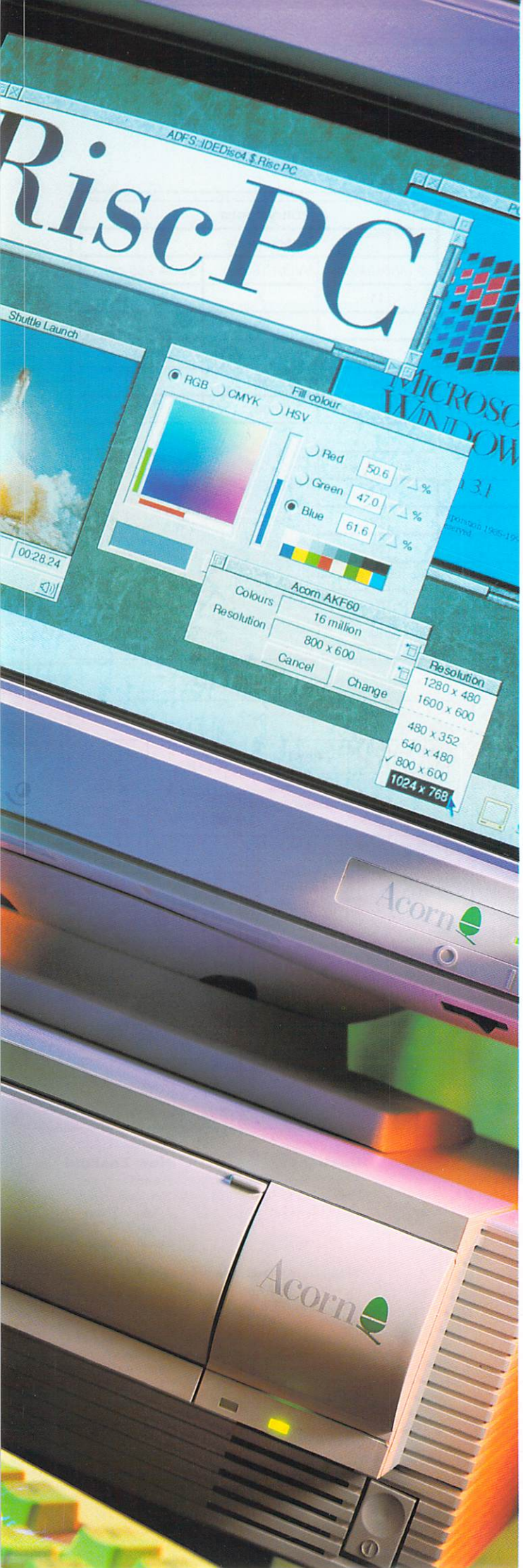
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 693 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 2
ARM610: first of a new series of CPUs for Acorn

April 1994

At the heart of the Acorn Risc PC lies a new 30MHz ARM 610 microprocessor, designed by Advanced RISC Machines Limited. Like its predecessor, the ARM3 used in the A5000, this is a 32-bit RISC CPU with a 4kB cache, but it has been further developed into a new family of even higher performance processors to take Acorn computers into the next century.

Acorn

In addition to the 4kB cache, the processor of the ARM610 includes on the same silicon a write buffer and Memory Management Unit (MMU), using a 4k page size. These features increase the average execution speed and reduce the memory bandwidth required by the processor. This allows the external memory to support additional processors and Direct Memory Access (DMA) channels with minimal performance loss.

ARM700 designs will also be launched with an 8kB cache, enhanced write buffer, a memory Translation Look Aside Buffer (TLB) doubled in size and optional floating-point interfaces. This will be followed by the ARM800 designs.

ARM610 processor's are extremely energy-efficient, consuming significantly less power in operation than other CPUs with similar performance. This has benefits in reliability and heat dispersal.

Performance

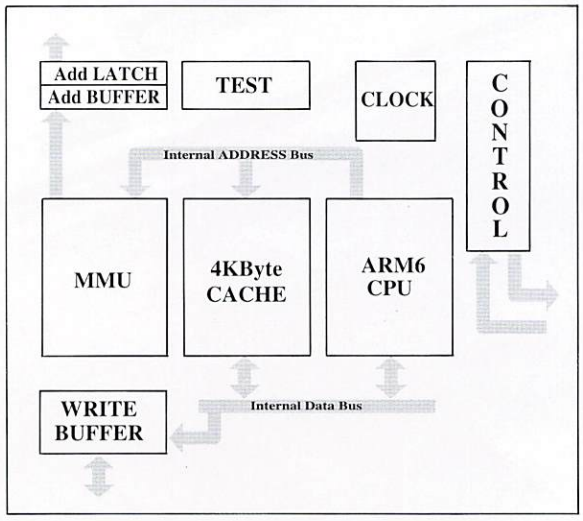
The new processor gives the Acorn Risc PC exceptional performance, particularly in high-resolution graphics modes (when fitted with VRAM) - approximately twice as fast as a 25MHz A5000 in 16-colour VGA mode, for example.

The table below shows its performance benchmarks against other Acorn computers and PC competition:

Machine	MIPS	kDhrystones		
		Screen mode		
		0 (480x240)	SVGA 16-col	SVGA 256-col
A4000 12MHz	6	11	7	3
A5000 25MHz	12	22	20	10
A5000 33MHz	15	26	23	13
A610 30MHz	22	39	36	25
A610 1MB VRAM	23	40	40	40

		VGA 16-col
386 SX - 33	6	11
486 SX/DX - 25	11	19
486 SX/DX - 33	15	26
486 DX2 - 50	19	33
486 DX - 50	20	35
486 DX2 - 66	23	40

The block diagram shows the layout of the ARM610:



United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

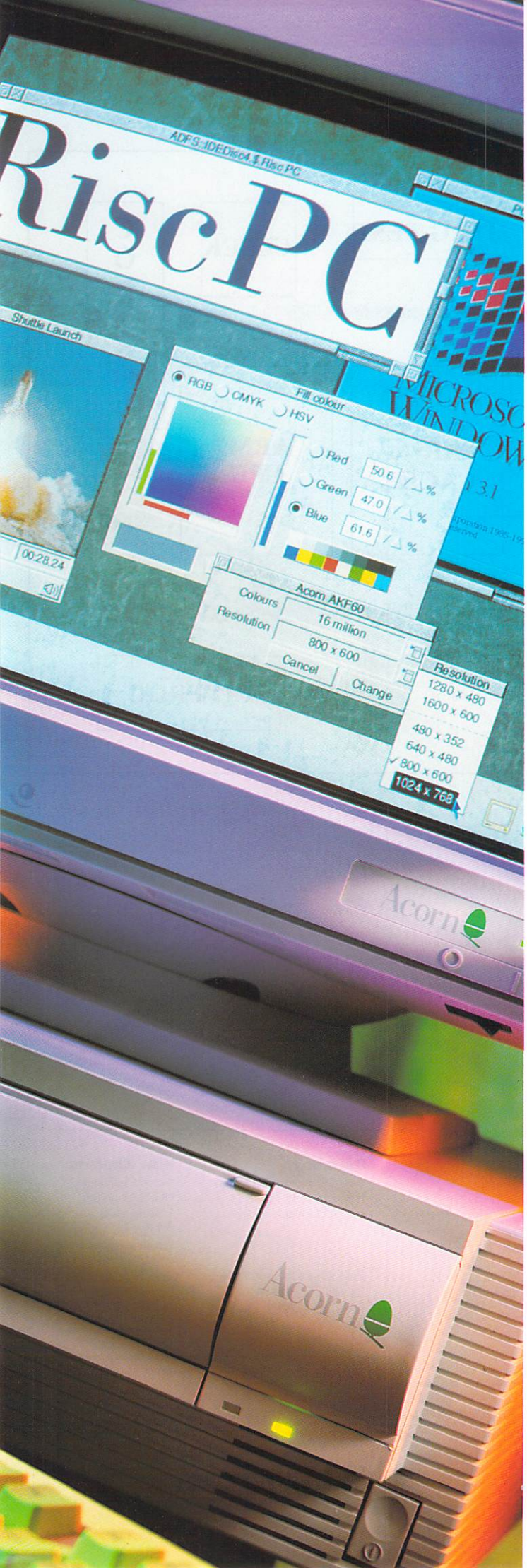
Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.
APP 696 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 3
ARM700: the next step

April 1994

A high-performance ARM700 processor will be the next processor to become available in the Acorn Risc PC. This processor is a logical development of the ARM610, with the following improvements:

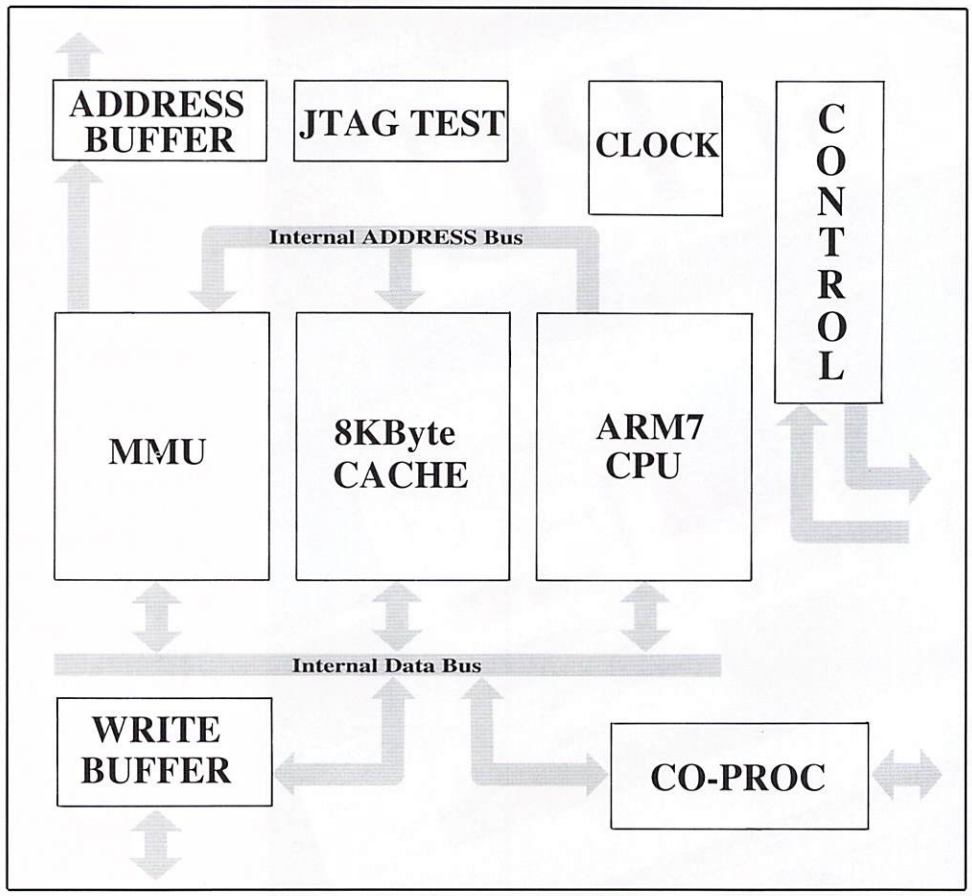
- cache size doubled from 4kB to 8kB
- improved write buffer
- enlarged Translation Lookaside Buffer (TLB) in the Memory Management Unit
- co-processor interface for FPA11 (Floating-Point Accelerator)

Acorn

These improvements mean that the ARM700 can run at even higher clock speeds than the ARM610 without exceeding the capacity of its internal data bus, thereby delivering even greater performance.

The co-processor interface of the ARM700 enables you to fit an Acorn FPA11 chip (see separate information sheet) into the socket provided on the main processor card. The FPA processor has a peak throughput of up to 5 MFLOPS (Millions of FLoating point Operations Per Second) at 25MHz and achieves an average throughput in excess of 3 MFLOPS for a range of calculations. Floating point performance of the Risc PC is increased by as much as a factor of 50. Computationally intensive applications that benefit from the performance increase typically include spreadsheets, relational databases, finite element analysis, CAD, image analysis, modelling and vector graphics.

This is a block diagram showing the layout of the ARM700 processor:



United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.
APP 692 FIRST EDITION APRIL 1994.

RISC PC

Data Sheet 4
Acorn Floating Point Accelerator (FPA11)

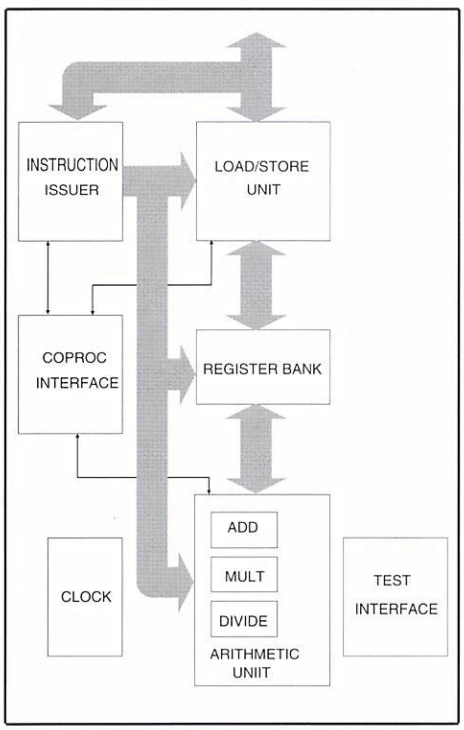
April 1994

FPA11 is a floating point accelerator suitable for use with the ARM700 CPU, due to be introduced into the Acorn Risc PC later in the year. It uses a combination of silicon and software to deliver a cost-effective level of performance combined with low power consumption. The combination of FPA11 hardware and support software provides an IEEE 754-1985 conformant floating point system.

Acorn

The FPA processor has a peak throughput of up to 5 MFLOPS (Millions of FLoating point Operations Per Second) at 25MHz and achieves an average throughput in excess of 3 MFLOPS for a range of calculations.

Applications which make use of the RISC OS Floating Point Emulator automatically use the FPA chip once installed, increasing floating point performance by as much as a factor of 50. Computationally intensive applications that benefit from the performance increase typically include spreadsheets, finite element analysis, CAD, image analysis, modelling and vector graphics.



The design of FPA11 is based upon an 81-bit internal datapath, with autonomous load/store and arithmetic units which can operate concurrently. Single-, double- and extended-precision IEEE formats are all supported. FPA11 is interfaced to the ARM CPU over a simple, high-performance co-processor bus. The ARM instruction pipeline is mirrored in FPA11 so that floating point instructions can be executed directly with minimum communication overhead. Pipelining, concurrent execution units and speculative execution are all employed to improve performance without significantly impacting power consumption.

A RISC approach has been taken in selecting the floating point instructions which are implemented in hardware, and those which are handled by support software. The FPA11 instruction repertoire includes the basic operations, plus compare, absolute value, round to integral value and floating-point to integer and integer to floating-point conversions. In addition, only normalised operands and zeros are handled in hardware; operations on denormalised numbers, infinities and NaNs are handled by the support code.

Only the inexact exception is dealt with by hardware; all other exceptions cause the software support code to be called, whether or not the associated trap is enabled. This approach has helped to minimise the die size whilst having a negligible effect on performance in most applications.

The chip is implemented in 0.8 micron double-level metal CMOS, contains 130,000 transistors and is packaged in a 68-pin PLCC package. It fits into a socket on the ARM 700 processor PCB.

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

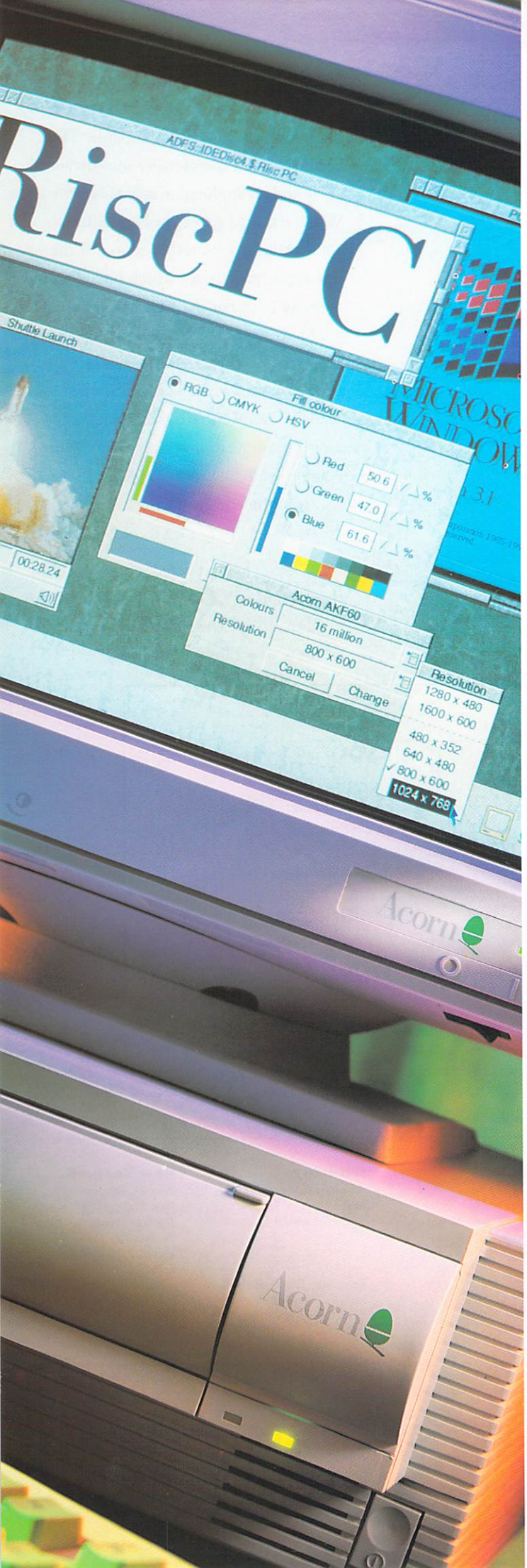
Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.
APP 699 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 5
Memory upgradable to 256MB

April 1994

The Acorn Risc PC can be fitted with up to **256MB** of DRAM (plus 2MB VRAM). RISC OS itself has been extended to handle up to 256MB in software to cover future hardware developments. 28MB is available as execution space for each application being run, though all available RAM can be used for data if required. When VRAM is fitted to a Risc PC, and the computer is running in screen modes which do not require it, **the VRAM is available to the operating system as additional Main Memory when not used by video display.**

Acorn

Memory hardware

The Acorn Risc PC is the first RISC OS platform to allow Single In-line Memory Modules (SIMMs) to be fitted to support DRAM. Two SIMM sockets are provided and any combination of standard 70 ns or faster 32-bit SIMMs is possible, with either of the sockets left empty. Each SIMM socket is a standard 32-bit wide 72-way connector.

A special Application Specific IC, IOMD, provides for a maximum memory capacity of 256MB. The Acorn Risc PC is capable of using 256MB, but SIMMs of sufficient capacity are not yet commercially available. SIMM are currently available up to 32MB each allowing easy upgrade to 64MB in a system.

The diagram overleaf shows the maximum physical space available for a SIMM in the Acorn Risc PC; the majority of 'off the shelf' memory modules will be somewhat smaller than this. If a memory capacity in excess of that available from commercial SIMMs is required, a custom module may be constructed using these maximum dimensions. Contact pads may be either gold or solder.

The DRAM must support 'fast page mode' and 'CAS before RAS' refresh.

The maximum loading on each signal is:

- Address 128pF
- WE 140pF
- CAS or RAS 59pF
- Data bus 29pF

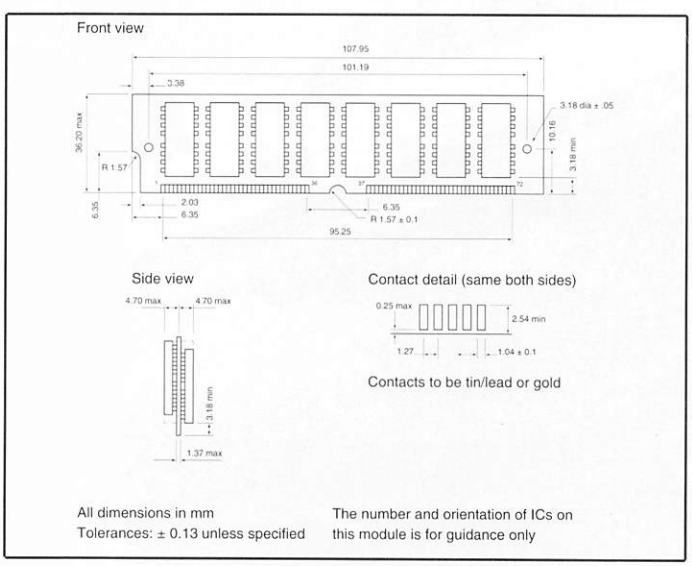
Software

RISC OS memory management in Version 3.5 has been extended in the following areas in order to provide support for the Acorn Risc PC:

- increased RAM sizes (up to 256MB DRAM + 2MB VRAM)
- allocation of memory to second processors
- ARM600 MMU page table allocation (page size reduced to 4KB)
- logical memory map extended to full 32-bit address space.

In RISC OS 2 and 3, the memory management task was divided between the kernel and the Wimp module. The kernel ordered the memory into dynamic areas and an application space, but the Wimp required a free pool and multiple application spaces, rather than just the one application space which had all spare memory in it. For the Risc PC, the free pool management has been moved into the kernel so that there is no longer a conflict between the kernel and the Wimp. The Wimp will still manage the multiple application spaces - the Wimp being the module responsible for constructing and managing tasks in the desktop.

RISC OS is able to detect automatically the amount of RAM fitted, so you don't need to change the configuration in software or set links on the PCB.



United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

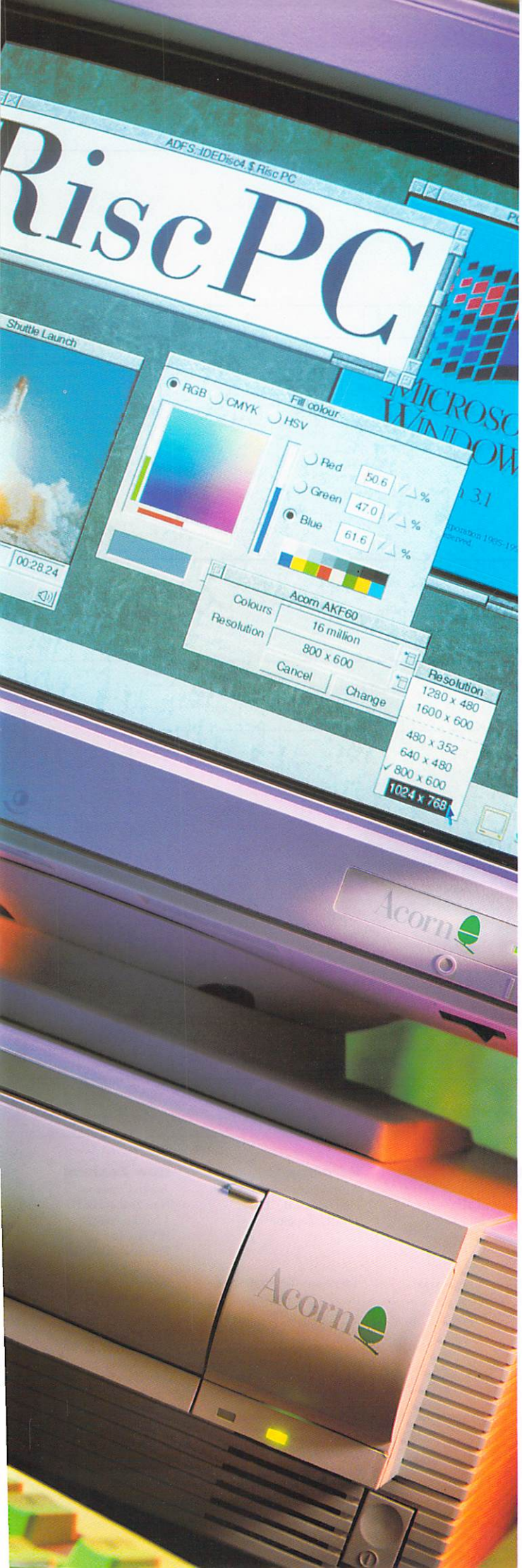
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 700 FIRST EDITION APRIL 1994.



Data Sheet 6
Multi-processor Open Bus

April 1994

The ARM processor in the Acorn Risc PC is mounted on a daughter card, and connected to the PCB via a 96-way DIN socket, in much the same way that the ARM3 processor was mounted in the A540. The big difference in the Acorn Risc PC is that alongside is an identical connector for a **second** processor card. The Acorn Risc PC is the first Acorn platform to offer support for more than one bus master - that is to say a second CPU can be connected to the system alongside the first. A new set of ARM data, address and control signals support a second processor on the processor bus, which is known as Open Bus.

The second processor is able to share resources such as memory and I/O with the main processor, which means that it is no longer necessary to provide duplicate memory and I/O systems when fitting a second processor. This has obvious benefits in cost, space and power consumption.

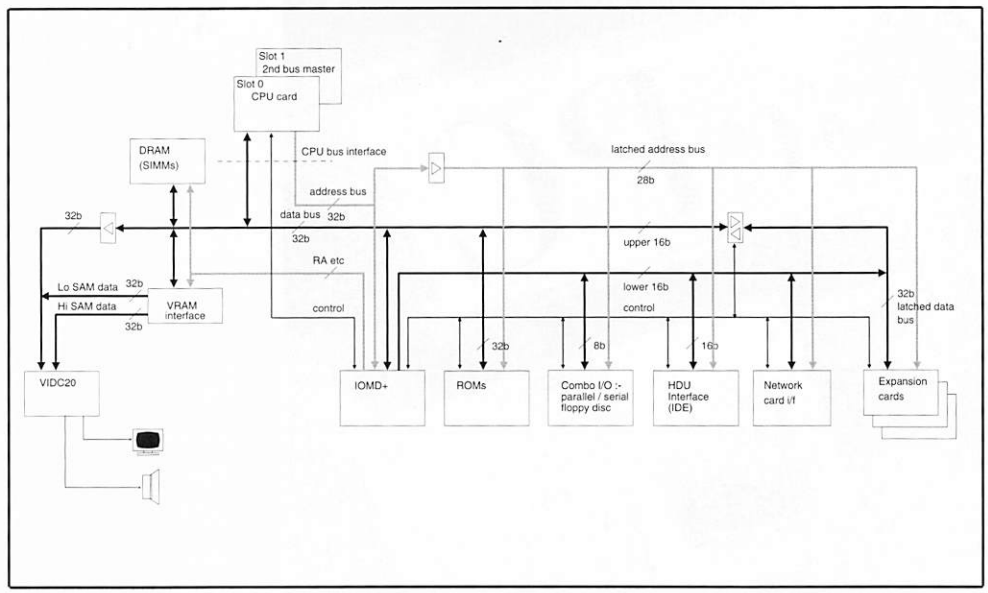
Any processor may be used, provided that its card contains all necessary arbitration logic, as the host card only contains the ARM itself and clock generation. The second processor card must also convert its own bus protocol to that of the Open Bus, which will usually be performed by an Application Specific IC (ASIC). A handshaking protocol has been implemented on the processor bus, with provision for semaphore interlock to prevent bus contentions.

The second processor can be another ARM, to provide a degree of parallel computation, or used for a dedicated task (such as DSP engine, network management or graphics pre-processing). Alternatively, the second bus master can be a 'foreign' CPU, such as one of the Intel 80 x 86 processor family.

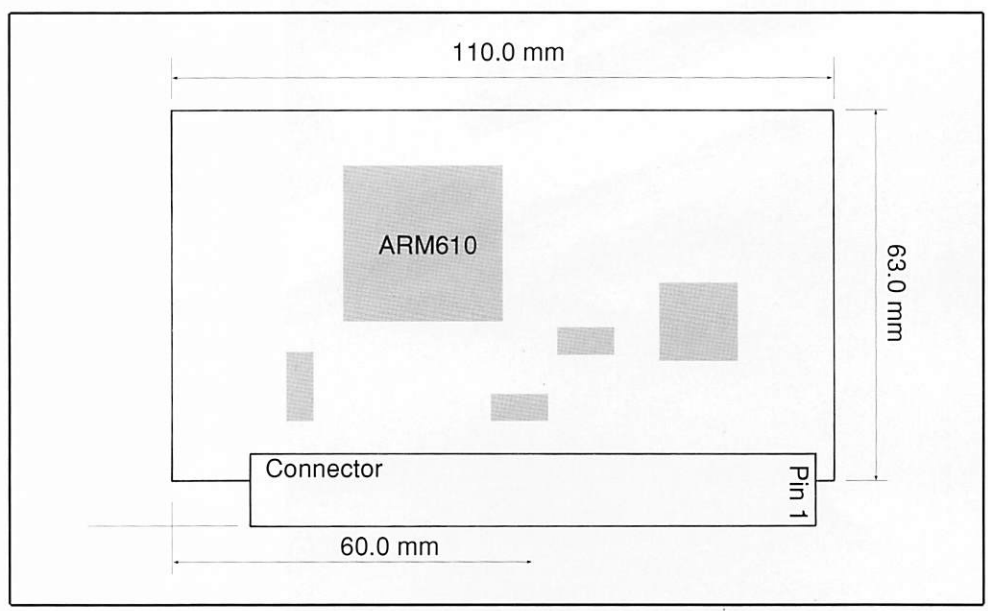
Acorn

Because both cards have full access to the computer's resident memory and I/O, an 80 x 86 processor permits a very cost-effective and high-performance DOS, windows or OS/2 support system to be implemented. Other applications might be a DSP processor for speech, I/O, image processing, or an application-specific device such as an MPEG video processor.

The block diagram for the Risc PC below shows the way the bus communicates with the system as a whole:



Processor card dimensions:



United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 702 FIRST EDITION APRIL 1994.

RISC PC

Data Sheet 7
DMA Extended Bus Interface

April 1994

The Acorn Risc PC can take two single-width expansion cards in its standard configuration, plus two more for every centre-section added to the system.

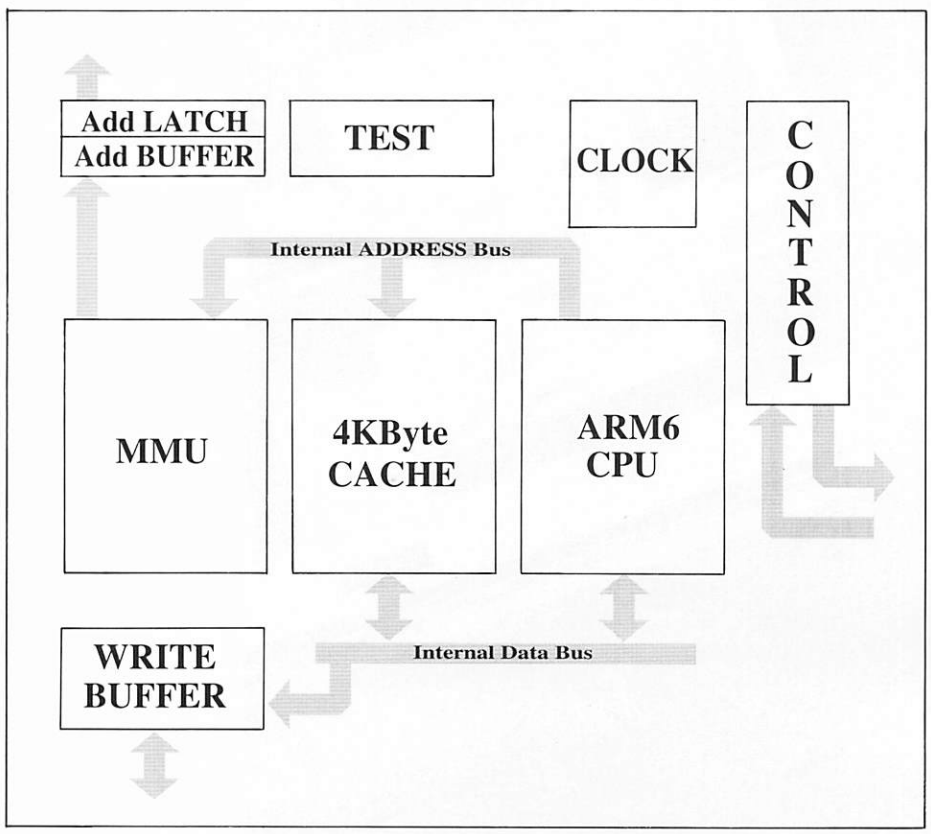
Acorn

The performance of the expansion card interface has been dramatically improved by increasing the data bus width from 16 bits on the A5000 and A540 to 32 bits on the Risc PC. Furthermore, the processor address space has been expanded from 4K to 16MB, plus the original 4K. This 16MB address space is known as DEBI (DMA Extended Bus Interface) space. DEBI space means that data held on an expansion card in ROM or RAM can now be read or written to directly, without the previous limitation of 4K page chunks. This greatly speeds up the transfer of data backwards and forwards between an expansion card and the main memory.

The DEBI bus on the Risc PC, as its name implies, also supports Direct Memory Access (DMA), so that data can be read from and written to system RAM by expansion cards, without interrupting the CPU.

The new DEBI bus makes it possible to implement even higher performance expansion cards handling large amounts of data, such as video capture and direct-drive printer cards, which can have substantial on-card buffer memory, which is now addressable directly by the ARM processor.

Existing expansion cards which conform to Acorn specifications will continue to be supported, although double-width cards will no longer fit in the case.



United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

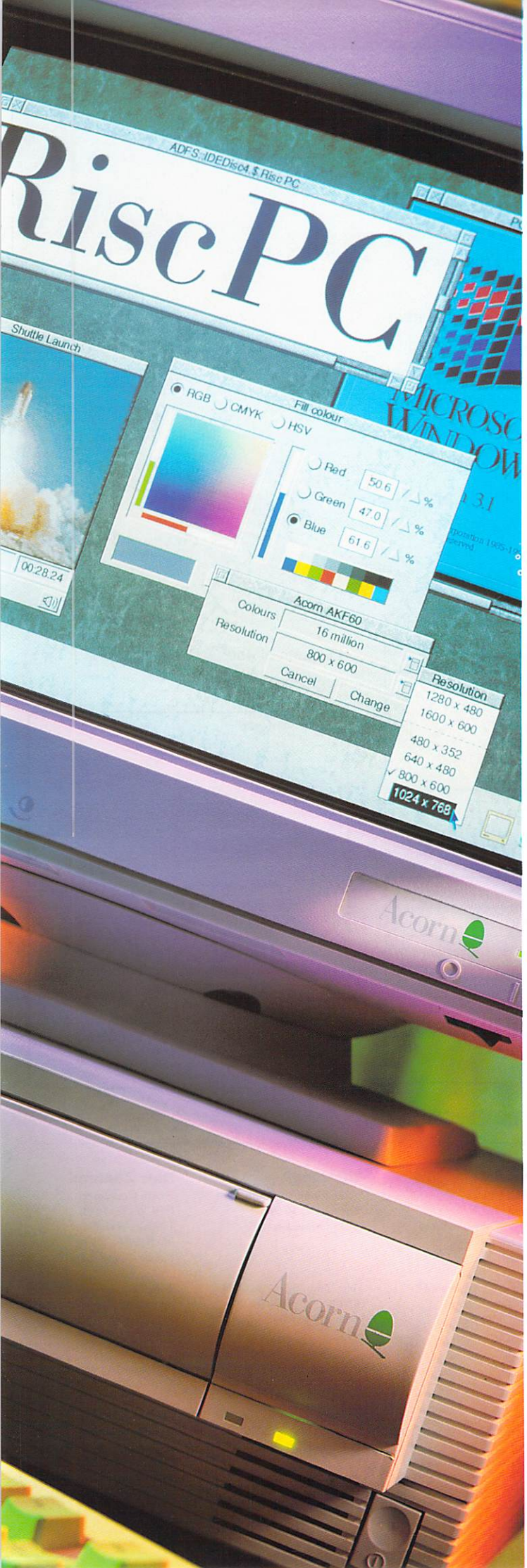
Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.
APP 697 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 8
PC Card: RISC OS and Windows

April 1994

The Acorn Risc PC's Open Bus architecture (see separate information sheet) makes it possible to fit a second processor to the computer, sharing all the memory and I/O facilities of the main (ARM) processor. This represents a tremendous cost advantage over traditional second processors mounted on an expansion card, which required memory to be duplicated. The first of these second processors to be offered on the Risc PC will be a 25/33MHz 486SX PC Card which includes DOS. So, for not much more than the price of your Acorn Risc PC, you'll be able to have a 486 PC as well!

With a PC Card fitted, your Acorn Risc PC will behave just like an ordinary 486 PC with Windows and a graphics accelerator card (offering SVGA video), and be able to run most Windows software when you need to.

A special Application Specific IC (ASIC) is being developed, embodying all the speed-dependent PC logic, thereby reducing the load on the host ARM processor. Performance will be further enhanced by an optional 32KB or 128KB secondary cache on the processor chip, which will be managed by a cache controller included in the ASIC.

The ASIC will produce ISA-bus (AT-bus) signals to allow standard PC ISA expansion cards to be used. These will be fitted to the Acorn Risc PC via a special adaptor currently being developed by a third party.

In cases where you are running native RISC OS processes on the ARM as well as using the PC Card, the Task Manager will allow you to set priorities when

Acorn

allocating processor bus time between RISC OS and PC processes.

Later versions of the PC Card will offer XGA graphics (1280 x 1024 x 256 colours). Support will be offered for Novell networking, SCO UNIX and other Intel binaries. The 16-bit Risc PC Sound Card currently being developed will provide MPC (Multimedia PC) audio and a subset of the Soundblaster card for PC games.

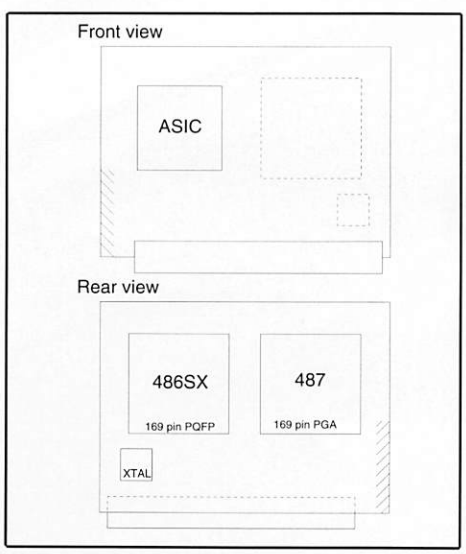
It is expected that even higher performance PC Cards will be introduced, using the 100MHz 486 DX/3 and P24T Pentium processors.

Acorn is developing the 486 Second Processor Card in conjunction with established Acorn peripheral manufacturer Aleph One Ltd and Future Technology Devices International (FTDI). FTDI is designing a custom ASIC for the 486 Second Processor Card; Aleph One is co-ordinating software development and licensing its proven IBM PC-compatible BIOS and Microsoft Windows acceleration software for use with the 486 Second Processor Card.

Here are the key features of the ASIC:

Write-through cache controller	Requires 5 x 8-bit SRAMs externally to operate
2 Interrupt controllers (Intel 8259 equivalent)	
1 Timer (Intel 8254 equivalent)	
ISA-bus controller and interface pins	
Port B logic	
8042 keyboard controller emulation	Command/data mailbox GateA20 FastReset
RTC emulation logic	
DMA controller emulation	Emulation support logic
Aleph One CALLAS interface logic	
ARM interface	Cache fill burst re-sequencing ARM bus arbiter Misaligned data assembly Bus I/O drivers and pins

Diagram of 486SX Card with 487 upgrade socket:



United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

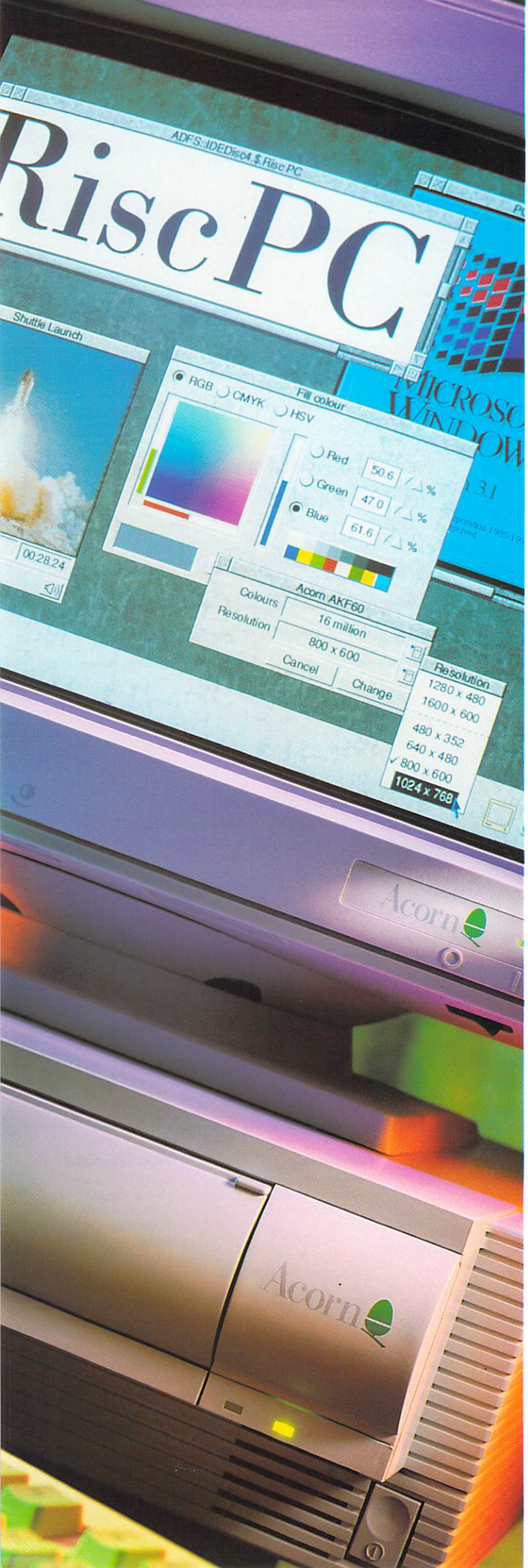
Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.
APP 703 FIRST EDITION APRIL 1994.



Data Sheet 9
Risc PC Ethernet Card

April 1994

Acorn Universal Networking (AUN), Acorn's networking strategy for the 1990s and beyond, aims to place Acorn computers at the heart of whole-site networks, using a standard cable type: Ethernet. Such a network can support a mixture of Acorn and non-Acorn computers, such as PCs and Apple Macs. AUN will support data interchange via this kind of connectivity as networking requirements change and grow.

Acorn

As part of this strategy, a simple, compact Ethernet Card has been developed for the Acorn Risc PC, and this is the only additional hardware you need to connect your Risc PC to an Ethernet network.

The Risc PC Ethernet Card Printed Circuit Board (PCB) measures 84 mm x 75 mm (and 18 mm thick), and just plugs into a dedicated socket on the main computer PCB. It conforms to ISO/IEC 8802.3, and provides a 10Base2 (commonly known as thin Ethernet) interface via a BNC connector on the back panel of the computer. It does not take up any of the expansion card slots, leaving them free for other uses.

The card is available in two forms, with different firmware: a standard version for use with Acorn TCP/IP and Level 4 networking and as part of an Acorn Access pack for simple disc- and printer-sharing networks.

TCP/IP has been adopted by the majority of computer manufacturers as the de facto standard for connecting into heterogeneous networks/systems (UNIX and non-UNIX).

Users in the Acorn community now benefit from this connectivity with Acorn's TCP/IP Protocol Suite (Release 2) which provides VT220 emulation, NFS and Internet access, and support for a wide range of proprietary and off-the-shelf network devices. You can easily connect your Acorn Risc PC into an existing campus TCP/IP network.

The standard Ethernet Card can support both Level 4 and TCP/IP protocols simultaneously, enabling co-existence between Econet, Ethernet, and UNIX and hybrid networks with TCP/IP.

The following table shows the specification of the Risc PC Ethernet Card:

Performance	500KBytes/Sec (using UDP)
Network interface	16-bit
Electrical isolation	Withstands 500VRMS for one minute
Safety standards	IEC 950, EN60950
MTBF	30,000 hours
Environmental performance	0°-40°C, 0%-75% humidity (non-condensing)
EMC	Designed to EN55022 and/or Vfg243+46
Immunity	Designed to EN55024 Parts 2 and 4

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 698 FIRST EDITION APRIL 1994.

RISC PC

Data Sheet 10 Application compatibility

April 1994

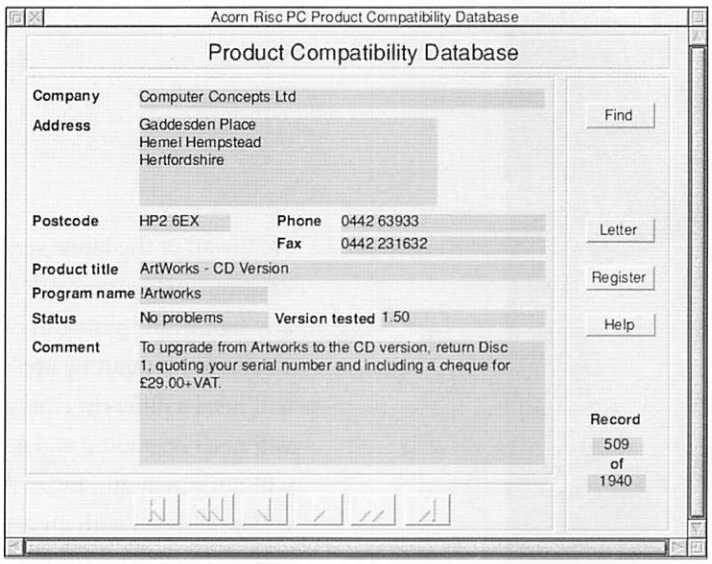
Nearly all of the latest versions of existing applications will run without any significant problems on the Risc PC. Of the few remaining applications some will need a different configuration, a few will need upgrading and a small number will not run at all. Every Acorn Risc PC will be shipped with an application called !Products. This is a database giving you information about running current RISC OS applications on the Risc PC.

Acorn

To use !Products

Load it onto the icon bar. Click on the loaded icon and the product information window will be displayed.

You can find out about a particular application either by clicking on the Find button and entering its name or the name of the company which makes it, or by simply dropping the application icon onto the window. Information about the application will be displayed - whether or not it has been tested, and if so, how it runs. Any configuration changes recommended are detailed, and if an upgrade is necessary, details given on how to obtain one.



Information is included on about 850 software titles.

The latest versions of existing software can be divided into the following categories in respect of its performance on the Acorn Risc PC.

Works perfectly or with minor restrictions

This is by far the largest group, representing about 85 per cent of software titles published for RISC OS 3 Version 3.1. In some cases there may be minor imperfections, such as menu options being out of line because a proportional font is now used in them, but otherwise they are fully functional.

Upgrade required

In these cases (about ten per cent of titles) an upgrade to the existing software will be required, and the publisher has indicated that may be made available.

Works with configuration change

This group covers about two per cent of titles, where small changes (such as resizing the WimpSlot, for example) can be made by the user to make the application run satisfactorily.

Will not work

This group comprises about three per cent of existing titles. These will not work on the Risc PC, although it is possible upgrades may become available later.

In addition to the help given in !Products, the Utilities directory on the hard disc of the Risc PC contains a number of new modules for Acorn software (Advance, DDE and PC Soft for example), plus some software patches from third-party software publishers for their own products.

Other applications

Old versions of applications, those running under the 6502 (BBC) Emulator and those used with double-width expansion cards (which cannot fit inside the case of the Risc PC) are not listed in !Products and not included in the survey above. These will not run on the Risc PC.

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

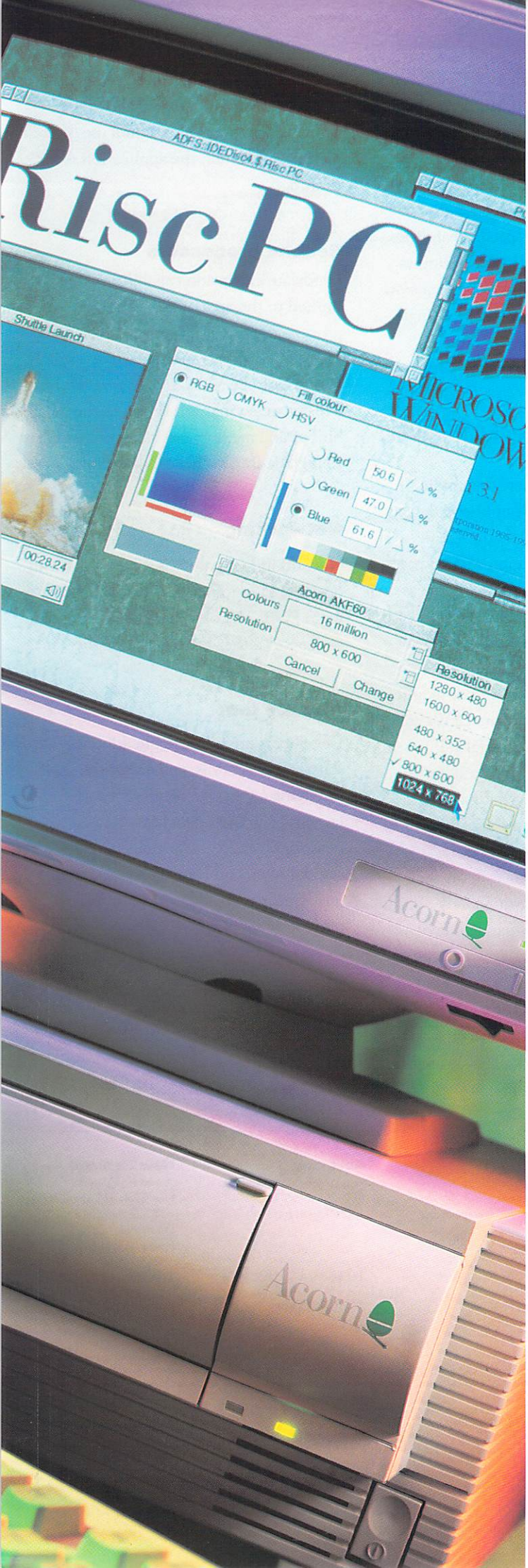
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 691 FIRST EDITION APRIL 1994.



Data Sheet 11 Developing for the Risc PC

April 1994

While most existing applications developed for RISC OS 3 will function satisfactorily on the Risc PC, its advanced architecture provides new opportunities for developers to produce high-performance applications for a wide variety of markets. The enhanced hardware architecture of the Risc PC has enabled RISC OS to be extended in several areas, providing a broader API for the programmer developing applications. The specification and performance of many of the hardware interfaces has been extended too - in particular the expansion card interface.

Enhanced colour capability

The use of the new Video Controller, VIDC20, provides for an enhanced colour capability. Applications software can take advantage of screen modes offering 1, 2, 4, 8, 16 or 32 bits per pixel (bpp) with a choice of up to 16 million colours. In the new 16 bpp modes, 5 bits are allocated for Red, Green and Blue, and in the 32 bpp modes, 8 bits each are allocated. ColourTrans operations have been extended to cater for best matching between application colours and the actual screen palette in use. The VIDC20 palette now includes supremacy bit information as part of the 32-bit word which provides support for transparency and overlay colours. Screen resolutions can extend up to 1280 x 1024 without the addition of further graphics cards. To support this greatly enhanced colour capability, a new sprite format has been introduced for bit-mapped graphics and SWI calls extended to support the wider range of screen displays. A new Colour Picker is supported by RISC OS which allows applications to provide flexible desktop dialogue boxes with which the user can manipulate colours in RGB, CMYK and HSV colour models. To enable

Acorn

applications using higher resolution graphics and colour depths to remain very fast in performance, Risc PC machines can be fitted with VRAM. VIDC20's 64-bit bus can take full advantage of any VRAM fitted and there are new operating system SWI calls in RISC OS to allow the programmer access to control the optimum use of the fitted DRAM/VRAM.

Greatly increased memory

The fact that the Risc PC can address up to 256MB of DRAM (see Memory information sheet) in addition to 2MB of VRAM has resulted in extensions to the API for memory control by applications. The opportunity has also been taken to improve the RISC OS memory model, which together with the smaller memory page size of 4KB, has allowed for more efficient use of any memory fitted to the computer. Dynamic areas of memory can now be created and removed in addition to being resized in an efficient way. Fragmentation effects are reduced and new operating system calls allow applications to recognise more available memory. To complement this fast, extended memory architecture, DMA is now available for two of the expansion card positions.

32-bit expansion bus

In addition to the provision of DMA capability on two of the expansion card connectors, the expansion bus now has 32-bit capability in addition to the previous 8- and 16-bit modes. Cards also now have access up to 16MB of their own memory space. Higher performance I/O cards can now be designed, allowing data transfers of around 5MB/sec or more; advantage can now be taken, for example, of the higher speed capabilities of the SCSI-2 specification. Developers should note that double-width expansion cards are no longer supported and single-width cards should meet the more stringent Eurocard width of 100 mm.

High-speed Serial and Parallel ports

In line with the ever more demanding needs of users for faster peripheral device support, both the Parallel and Serial ports provide faster data rates under the control of the programmer when required. A new buffer manager has been added to RISC OS and the Parallel port takes advantage of this. The buffer manager allows applications that require low latency to bypass the usual SWI call interface by making one initial call to set up memory pointers. These pointers address control routines that manage data transfer to and from the parallel device through software buffers, minimising interrupt demands on the main processor and allowing many recently introduced fast-parallel devices to be supported. The Serial port now incorporates hardware buffers which allow baud rates up to 115Kb/sec, again minimising interrupt demands on the main ARM processor. A new SWI call has been included which enables applications to determine what types of I/O system chips are fitted, allowing applications to make optimum use of the platform on which the application is running.

Second processors

Hardware expansion capabilities are not limited to the area of I/O. A second processor socket is provided on the main PCB which allows an alternative processor to be added to the computer. This processor has full access to the 32-bit bus and memory areas, but will need to include its own bus arbitration logic.

Networking

Networking capability is supported via an optional plug-in network card on the main PCB. The optional card is intended to support either Ethernet or Econet.

Primary font

Developers providing application software for schools, and currently supplying a font specifically for early learning purposes, should be pleased to hear that Risc PC now includes as standard Sassoon Primary Type, a non-serif typeface, in addition to those previously supplied.

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

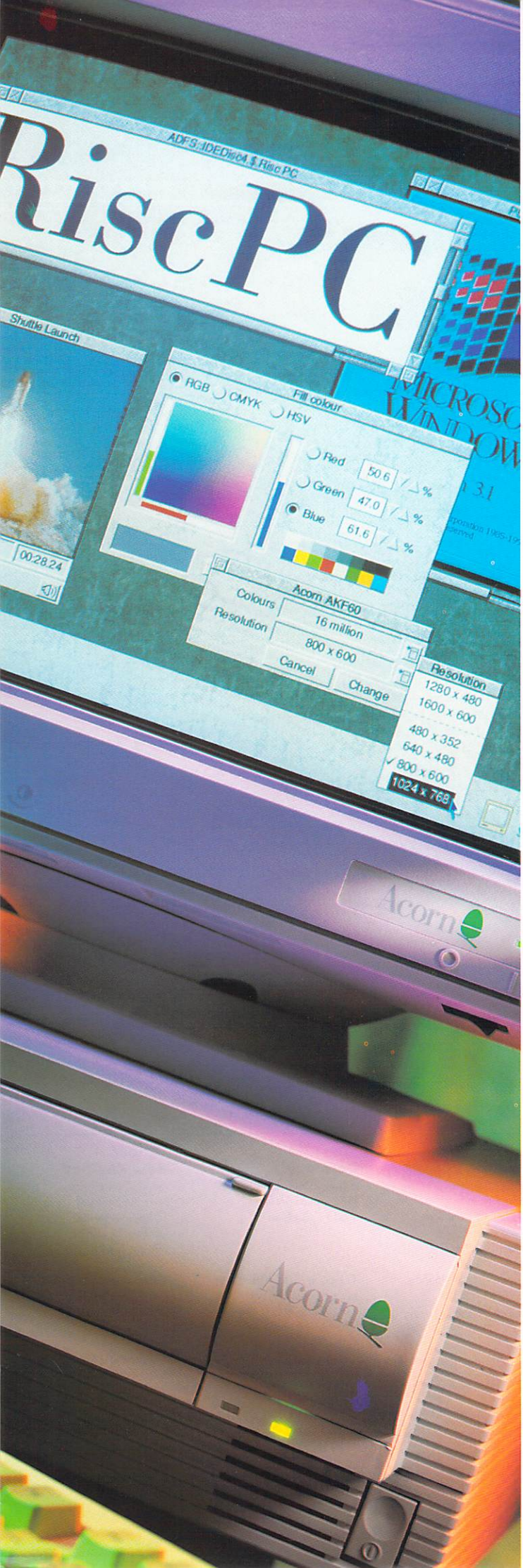
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 706 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 12 New faster C compiler

April 1994

Improved libraries and modifications to the code generator have resulted in a new Acorn C compiler, C Release 5, which is more efficient and compiles programs which run typically ten per cent faster than C Release 4.

Acorn

The compiler is being made available to developers (through Acorn Developer Support), and will be on sale publicly later in the year, as part of a new release of programming tools for RISC OS. The latter will also include a comprehensive library of RISC OS desktop objects (such as windows, menus and dialogue boxes) for writing Style Guide-compliant applications, a new Assembler and a C++ compiler.

The performance improvement is the result of many small improvements to the compiler, such as in-lining some commonly used small library functions, and the introduction of conditionalised conditions. Another important enhancement which has been made to Acorn C is the introduction of Variable Lifetime Analysis: C Release 5 is now smarter at allocating variables to registers. These improvements together result in smaller programs which use less memory and run faster.

The Acorn C compiler compiles ANSI C as defined by the American National Standard for Information Systems - Programming Language C, X3J11/90-013, 14 February 1990.

The compiler has been tested against release 2.00 of the Plum-Hall C Validation Suite (CVS), widely regarded as the toughest C test suite available, and adopted by the BSI for C validation in Europe. In the language conformance sections of the CVS, it fails in only two trivial ways, both of which concern production of required diagnostics.

Acorn C Release 5 also has a pcc mode, accepting the dialect of C used by Berkeley UNIX.

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

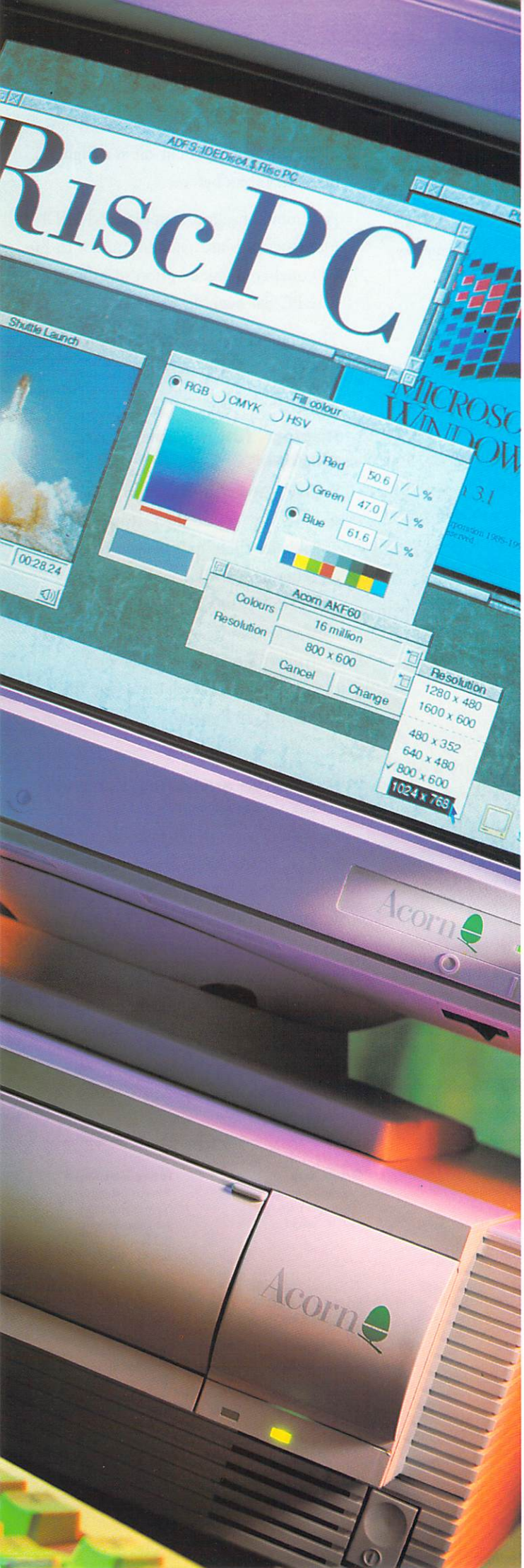
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 695 FIRST EDITION APRIL 1994.



Data Sheet 13 Risc PC for multimedia

April 1994

The Risc PC is ideal for multimedia applications. Every Risc PC comes with:

- full 24-bit colour capability
- up to 256MB RAM
- optional CD-ROM drive
- PhotoCD capability
- 210 or 420MB hard disc capacity fitted to standard models
- DEBI bus
- Stereo sound
- Replay - full-motion video playback

Full 24-bit colour

The new Acorn Risc PC offers a choice of up to 16 million colours, and you can have this choice at SVGA resolution (800 x 600 pixels) where 2MB of VRAM is fitted. If you need a higher resolution than this, you can choose up to 1280 x 1024 non-interlaced, even on a standard Acorn Risc PC with no VRAM fitted, in four levels of greyscale, or in 256 colours if you fit 2MB of VRAM.

There is also a specially designed 70Hz Replay mode of 480 x 352 pixels, for full-motion video. This can display up to 16m colours with 1MB VRAM and 32,000 colours without VRAM.

Industry-standard JPEG 32-bit colour images can be loaded into the Risc PC, decompressed on the fly and further processed as RISC OS sprites by the application ChangeFSI supplied with every machine. A hundred full-colour images are supplied with every machine to demonstrate its capabilities.

Acorn

Up to 256MB RAM

The Risc PC's powerful ARM 610 processor can address up to 256MB of memory, and although current technology limits its physical memory to 64MB using commercially available SIMMs, the Risc PC has more than enough RAM to load and manipulate the largest full-colour images, and combine them with text, graphics, video and sound.

Optional CD-ROM drive

The Risc PC has an empty 5.25" drive bay, ready to receive an optional CD-ROM drive providing a neat, integrated CD-ROM solution. Both RISC OS and (using the PC Card) DOS CD-ROMs can be used. Replay movies can be played from CD-ROM, and (subject to copyright) images copied from both RISC OS and DOS format discs, translated into sprites using ChangeFSI, edited and used in RISC OS applications.

PhotoCD support

The optional CD-ROM drive enables you to read Kodak PhotoCD-format discs, while the video performance of the Risc PC ensures that none of the original picture quality is lost. Once displayed on the computer, PhotoCD images can be edited and dropped into multimedia and publishing applications.

Up to 420MB hard disc capacity

With RISC OS out of the way in ROM, the Risc PC's standard 210MB disc is large enough to handle most data-intensive multimedia jobs. The 420MB model provides even more disc capacity, if it is needed.

DEBI bus

Multimedia often makes heavy demands on computers through video capture and sound cards. The data bus width has been increased from 16 bits on the A5000 and A540 to 32 bits on the Risc PC, and the processor address space expanded from 4K to 16MB, plus the original 4K. This greatly speeds up the transfer of data backwards and forwards between an expansion card and the main memory. The new DEBI (DMA Extended Bus Interface) bus on the Risc PC, as its name implies, also supports Direct Memory Access (DMA), so that data can be read from and written to system RAM by expansion cards, without interrupting the CPU. Together these features make it possible to implement even higher performance expansion cards for the Acorn Risc PC.

Stereo sound

Every Acorn Risc PC has eight channels of sound built into it. Sound samples can be stored in several formats - 8-bit linear, exponential, ADPCM and 16-bit linear for example.

The Risc PC features an improved noise filter, with a steeper cut-off at a higher frequency than before.

A number of sound sampling and MIDI interface cards are available, and a 16-bit CD-quality upgrade option specific to Risc PC has been developed.

The computer has a built-in speaker and stereo headphone socket.

Replay - full motion video playback

Replay - Acorn's full motion video system - is a world leader. It has made it possible for thousands of users to put together multimedia publications on Acorn computers at low cost. Replay's playback software, ARPlayer, is included with every Risc PC, together with a number of movies demonstrating the capabilities of Replay.

Extensive authoring software base

Acorn was an early adopter of multimedia techniques and a strong software base of multimedia authoring applications already exists. These enable you to combine full-motion video, audio, text and images in hypertext-linked documents which can be designed for interactive training, reference, project work or just plain fun!

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

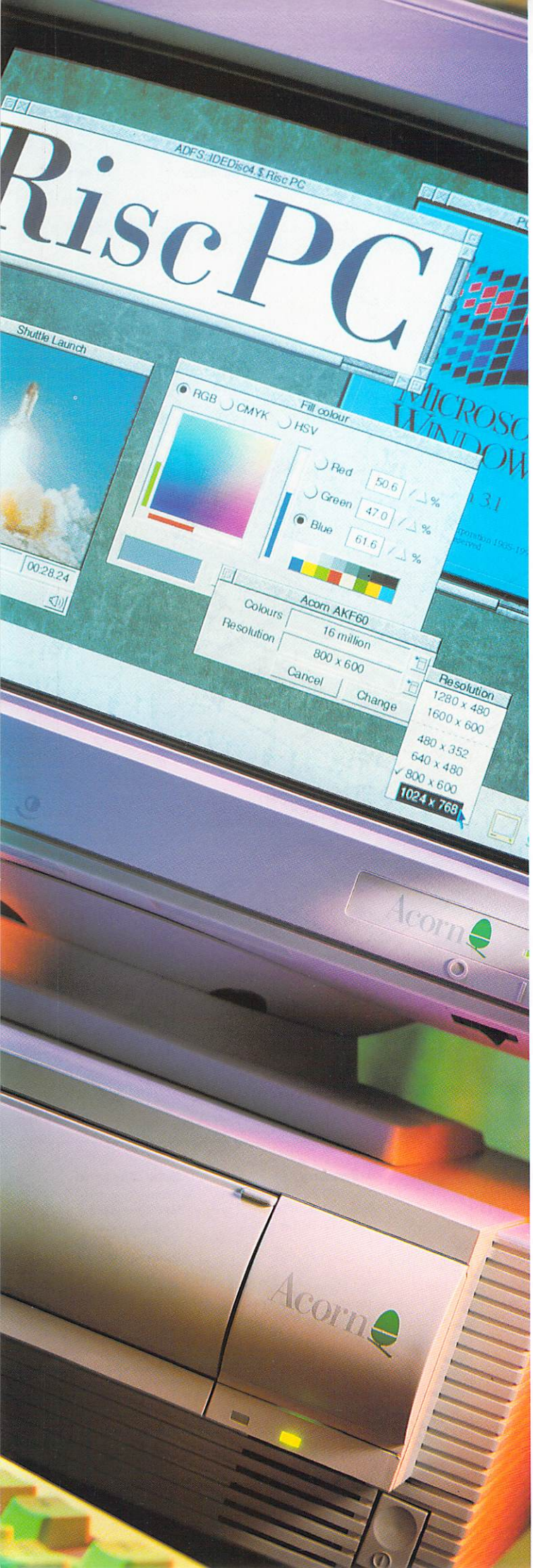
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 701 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 14
Versatile modular case design

April 1994

The Acorn Risc PC case is traditional in one sense - the original design concept is by Cambridge Product Design, which styled the legendary BBC microcomputer. But in all other ways the case for the Acorn Risc PC breaks new ground - in robustness, ease of access, expandability and security.

Robustness

Acorn computers have always been designed to take the rough treatment they get, but the new Risc PC is even better protected. The case is moulded entirely in Bayer Bayblend - a mix of tough ABS and polycarbonate - a high-impact-resistant plastic usually used in visors and riot shields. The case walls are 4 mm thick and extra strength is provided by 2 mm ribs. The inside is metal-sprayed to cut down electrical emissions.

Ease of access

The Acorn Risc PC supports an almost limitless range of configurations and upgrades - memory (VRAM and DRAM), disc drives (3.5" and 5.25" hard drives and CD-ROM drives), expansion cards, network cards (Ethernet and Econet) and even additional CPUs. Many users need to change their configuration frequently, so the computer needs to be easy to take apart and fit upgrades.

The Risc PC can be taken apart in seconds with no tools at all.

The case is of modular sandwich construction: top, centre-section and base (which holds the PCB).

Acorn

The top is held on with two glass-reinforced nylon twist-lock pins, and the centre-section by two more. You just unplug the drives and lift out the centre-section, revealing the PCB and power supply. A diagram of the case, with an extra centre-section, is shown overleaf.

Traditional fasteners are similarly absent from the disc drives, which are all held in place with spring clips, and the PCB clips into place too (although one screw is fitted to provide earth bonding).

Expandability

The modular centre-section of the case can hold one 3.5" and one 5.25" drive (two more on subsequent centre-sections) and up to two expansion cards. If you need more than this, you will be able to add another centre-section. And another, and another... up to a maximum of six. (You may need to upgrade the power supply if you will be drawing more than the maximum rated current.)

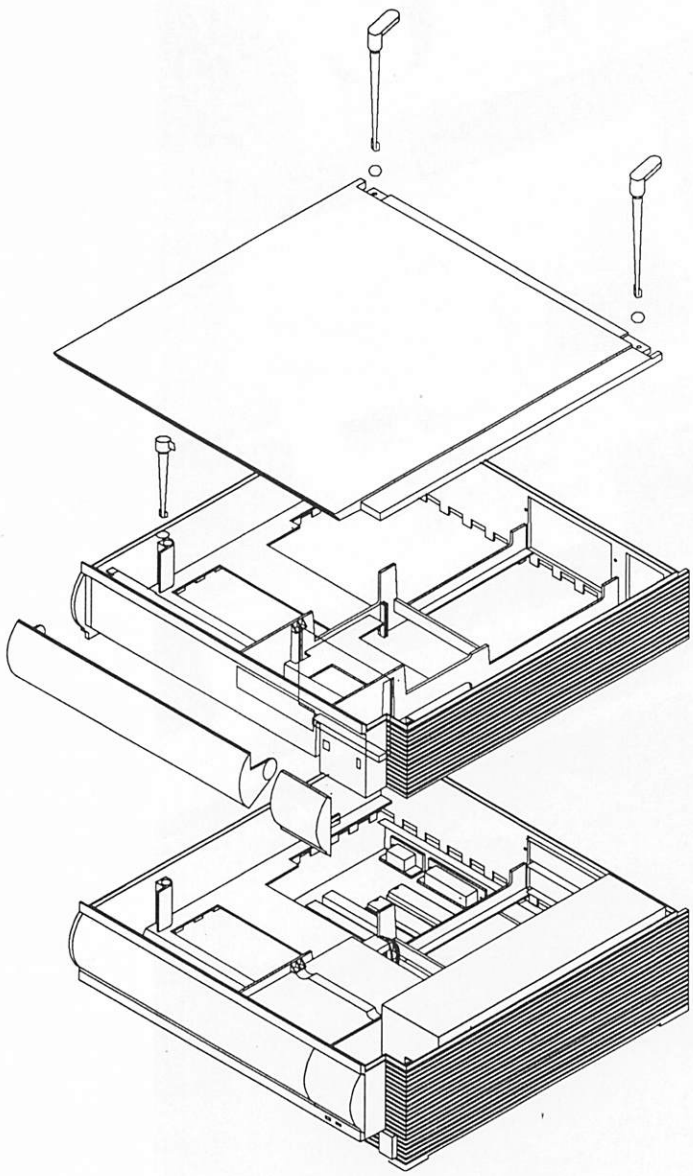
Security

We don't want to make it too easy for the wrong people to get inside your computer, so we have added padlock holes to the twistlock pins: if security is a problem, you can keep the top locked in position.

The case can be laid flat on your desk, with a monitor of up to 16 kg on top, or on its side in tower mode, whichever suits you best.

Dimensions

Height (standard)	117 mm
Height (two centre-sections)	182 mm
Height of each extra centre	65 mm
Width	355 mm
Depth	383.4 mm



United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

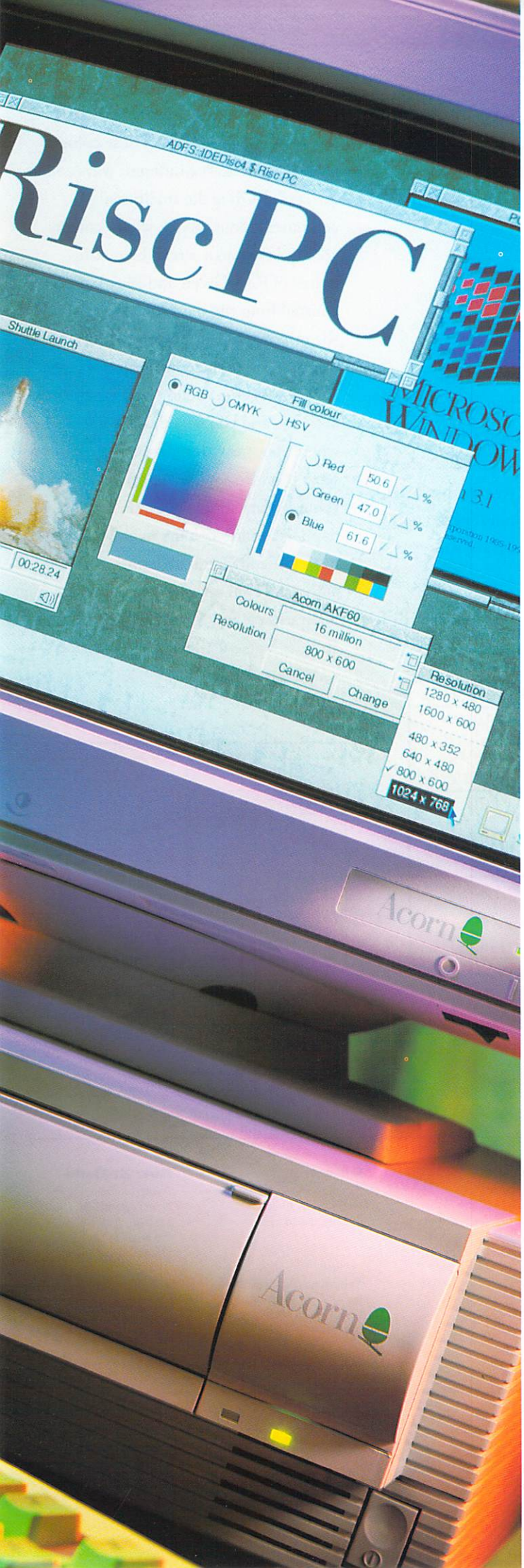
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 694 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 15
SVGA in 16 million colours

April 1994

The new Acorn Risc PC offers a choice of up to 16 million colours - and, what is more, you can have this choice at SVGA resolution (800 x 600 pixels) with 2MB of VRAM fitted. If you need a higher resolution than this, you can choose up to 1280 x 1024 non-interlaced, even on a standard Acorn Risc PC with no VRAM fitted, in 4 levels of greyscale, or in 256 colours if you fit 2MB of VRAM.

Acorn

Hardware

These resolutions and colour depths are made possible by the new ARM VIDC20 video chip. Video modes are fully configurable by the user, and there is a direct relationship between resolution and colour depth, so for some some applications you may choose a higher resolution at the expense of the number of colours, and in others more colours and less high resolution.

The guaranteed pixel rate achieved is 110MHz, with 135MHz typical on many systems memory bandwidth into VIDC20 is at least 38MB/s with no VRAM, rising to 76MB/s with 1MB and 152MB/s with 2MB VRAM fitted.

The following table summarises Risc PC video performance:

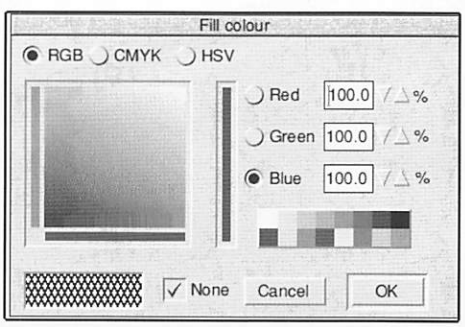
	Resolution	Colours	Refresh rate (Hz)	Pixel rate (MHz)
DRAM only	1280 x 1024	4 greys	60	110
	1024 x 768	16	70	75
	800 x 600	256	56	36
1MB VRAM	1280 x 1024	16	60	110
	1024 x 768	256	70	75
	800 x 600	32K	56	36
2MB VRAM	1280 x 1024	256	60	110
	1024 x 768	32K	70	75
	800 x 600	16m	56	36

Software

RISC OS has been extended to support VIDC20 and the new video modes it makes possible. Inside the operating system, changes have been made to the kernel and the SpriteExtend and ColourTrans modules.

What the user sees are a new Display Manager and Colour Picker. The new Display Manager replaces the Mode option on the Palette icon in previous versions of RISC OS. Click on the Display Manager icon, set the number of colours you want, and the possible screen resolutions available to you are displayed, given the number of colours chosen and the particular configuration of your computer.

The new Colour Picker allows you to work in one of three colour models - HSV, RGB and CMYK. These colour models relate to the different ways colour are used. RGB is the traditional computer colour model, where colours are displayed on a screen by mixing points of Red, Green and Blue light emitted from the monitor tube. CMYK is the printer's colour model - colour printing being made up of dots of Cyan (blue), Magenta, Yellow and Black key colours - and you would use this model where you wanted to produce colour separations to send to a printer. HSV (Hue, Saturation, Value), on the other hand, generates colours in a way similar to that used by artists when they mix paint: the Hue is the basic colour, the Saturation is the amount of white added, and the Value is the amount of Black added.



United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.
APP 707 FIRST EDITION APRIL 1994.

RISC PC

Data Sheet 16
17" SVGA Multiscan PowerSystem Monitor

April 1994

The 17" SVGA Multiscan PowerSystem Monitor exploits the advantages given by the architecture of the new Risc PC.

Its screen size of 17" and small dot pitch (0.27 mm - amongst the smallest in its class) make it ideal for desktop publishing as well as any other application requiring a wide screen and a crisp, sharp image.

An LCD display in the front panel allows the user to control the different settings available (up to 15 modes selectable). The control panel allows the normal adjustments (brightness, contrast, vertical and horizontal size/position) as well as the more specific ones a professional user could need (pincushion, Degauss, barrel, trapezoid, etc).
Its robust, polycarbonate-made case is fully recyclable. This monitor complies with MRP II certification and the EEC Display Screen Directive. It is manufactured by Dutch giant Philips Electronics.

Acorn

Specification - AKF85 SVGA Multiscan PowerSystem Monitor

General

Acorn monitor type:	High Resolution 17" monitor
Nominal screen size:	17"
Phosphor dot matrix pitch:	0.27 mm
Surface treatment:	Anti-glare, anti-reflection, antistatic coating

Mains input

Mains input voltage/frequency:	110-240V AC/47-63Hz
Mains input connection:	1mt cable with IEC 320 connector for direct connection to computer

Safety approvals

	EN60950 including all national variants
	EEC Low Voltage Directive 72/73/EEC
	PTB
	20780 Class B
EMC approval:	EN55022 (CISPR22) Class B
	89/336/EEC (EMC Directive)
Other approvals:	EEC Display Screen Directive 90/270/EEC
	EN29241
	MPR II
	ISO 9241-3

Scanning

Horizontal frequency:	30-82kHz
Vertical frequency:	50-120 Hz
Switching time between modes:	<2 sec

Video

Input type:	Analogue RGB, BNC (5 input sockets)
Input level:	0.7 to 1.0V
Synch input level:	TTL H, HV and V
Input impedance:	75 ohms
Input connection:	1m video cable with 15-way 'D' type connector

User controls

On/Off
Horizontal size and position
Vertical size and position
Side pincushion/barrel and trapezoid
Degauss
Brightness
Contrast
15 user-programmable modes
Auto resizing
BNC/D-shell input selector
LCD display

Physical

Nominal screen area:	315 x 232 mm
Positional adjustment:	Integral tilt and swivel base
Dimensions (H/W/D):	425/422/440 mm
Weight:	21 kg
Packaged dimensions (H/W/D)	520/590/620 mm
Picture centring:	±2 mm max
Misconvergence (centre/corner):	0.3/0.4 mm max
Linearity:	5% max
Colour:	Pantone Cool Grey

Reliability

MTBF:	50,000 hours (excluding tube)

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

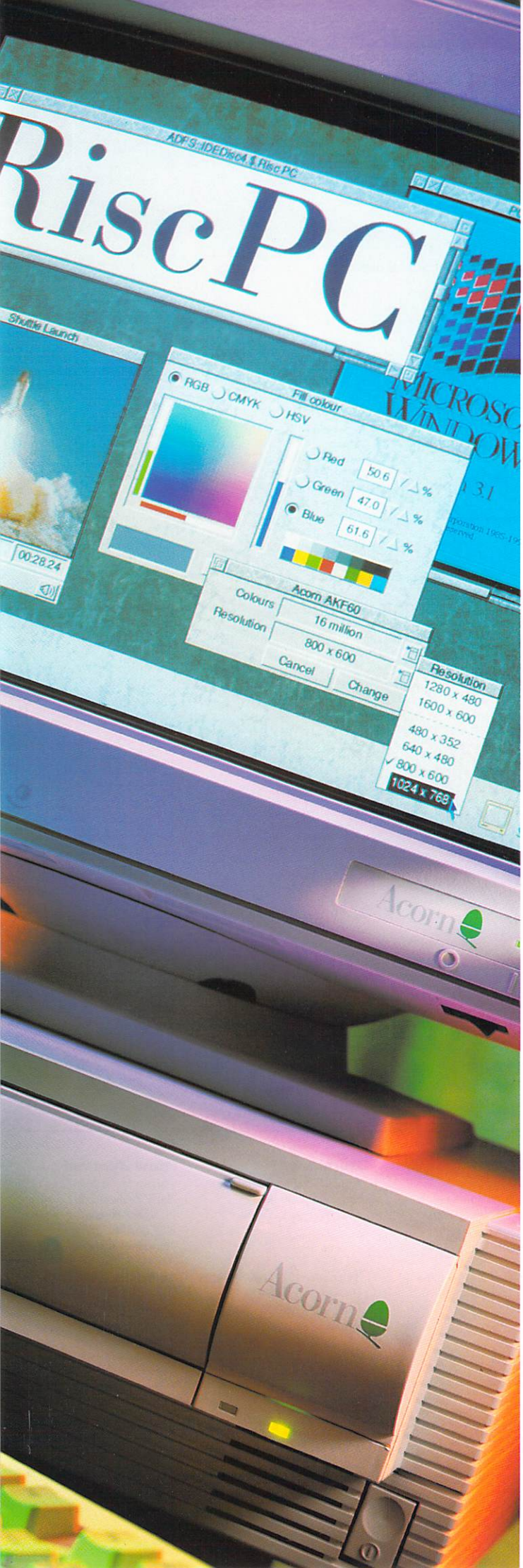
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 690 FIRST EDITION APRIL 1994.



Data Sheet 17
14" SVGA Multiscan ES (EnergySaving) Monitor

April 1994

The 14" SVGA Multiscan ES (Energy Saving) Monitor, aimed at the professional user, takes advantage of the architecture of the new Risc PC.

This monitor has a 14" nominal screen size with an extremely small dot pitch (0.28 mm), which makes it suitable for most of the applications which can be used on the Risc PC.

To reduce user strain to the minimum, its ergonomics have been carefully researched, and exceed the standards required by Swedish MPR II certification and the EEC Display Screen Directive (90/270/EEC) for low emissions. It is also Energy Star compliant (when used with any Risc PC), thanks to the Power Management System which allows a power consumption of less than 20 watts in Power Save mode (the American Energy Programme Agency, responsible for the Energy Star certification, set a maximum of 30 watts). It is manufactured by BS5750-certified Microvitec plc exclusively for Acorn, to Acorn's own specification.

Acorn

Specification - AKF60 SVGA Multiscan ES (Energy Saving) Monitor

General

Acorn monitor type:	High Resolution 14" monitor
Nominal screen size:	14"
Phosphor dot matrix pitch:	0.28 mm
Surface treatment:	Antistatic, anti-glare coating
Power save function:	Controlled by host computer

Mains input

Mains input voltage/frequency:	220-240V AC/47-63Hz
Mains input connection:	1m captive cable with IEC 320 connector for direct connection to computer
Power consumption:	<70W (normal), <20W (Power Save)

Safety approvals

	EN60950 including all national variants
	EEC Low Voltage Directive 72/73/EEC
	PTB
EMC approval:	EN55022 (CISPR22) Class B
	89/336/EEC (EMC Directive)
Other approvals:	EEC Display Screen Directive 90/270/EEC
	EN29241
	MPR II

Scanning

Horizontal frequency:	30-50kHz
Vertical frequency:	40-90Hz
Switching time between modes:	<2 sec

Video

Input type:	Analogue RGB
Input level:	0 to 0.7 to 1.0V
Synch input level:	TTL H, HV and V
Input impedance:	75 ohms
Input connection:	1m captive video cable with 15-way 'D' type connector

User controls

On/Off
Brightness
Contrast
Height
Horizontal shift

Physical

Nominal screen area:	260 x 195 mm (1024 x 768 - 60kHz)
Positional adjustment:	Integral tilt and swivel base
Dimensions (H/W/D):	345 x 360/380 mm
Weight:	12.5 kg
Packaged dimensions (H/W/D):	496/438/473 mm
Picture centring:	± 2 mm
Geometry distortion:	2.5 mm max
Misconvergence (centre/corner):	0.25 mm (< 0.45 mm) max
Linearity:	7% max
Colour:	Pantone Cool Grey

Reliability

MTBF:	35,000 hours (excluding tube)

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

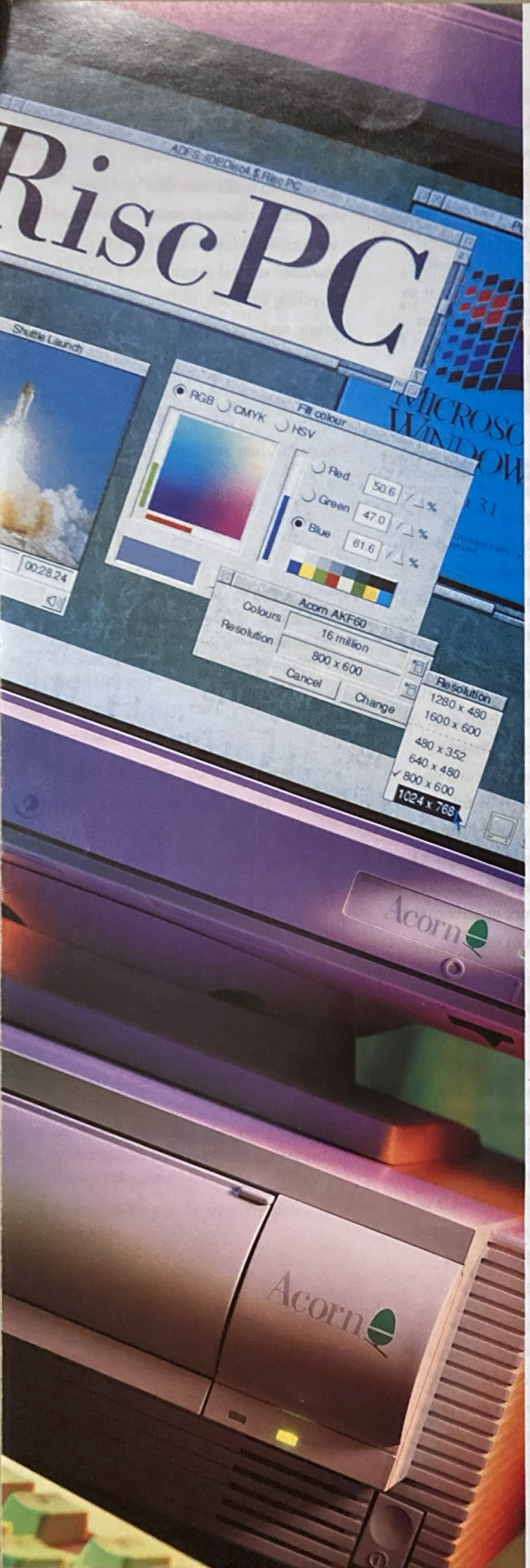
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 689 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 18
RISC OS 3 Version 3.5

April 1994

RISC OS 3, the operating environment already appreciated by many thousands of users of Acorn 32 bit computers has been extended to take advantage of the many new features of the Risc PC. This is now RISC OS 3 version 3.5.

RISC OS 3 comprises the filing system, a multitasking WIMP (Windows, Icons, Menus and Pointers) based graphical user interface controlled by a three button mouse and a powerful suite of applications software, utilities and example files. The integral icon bar provides immediate access to all loaded applications, filing systems and printers, thus enabling users to control the system quickly and easily, while the context sensitive pop-up menus provided by RISC OS give consistency across applications.

RISC OS 3 version 3.5 provides a 3D desktop look and allows a high quality anti-aliased font of the user's choice to be used as the main system font, providing a most attractive working environment.

The consistent approach to both operating system operations (such as file handling) and the application software designed and produced by hundreds of software vendors means that users feel "at home" with new applications rapidly; this decreases learning time and increases productivity.

Graphic images can be handled and displayed in many different forms from black and white, through to the unfettered choice from over 16 million colours. Support for moving pictures is an integral part of the operating system, with Acorn Replay providing facilities not only for viewing "movies" in their own right, but also offering support to other applications

Acorn

that may wish to use full-motion video. You can use practically any type of monitor with your Risc PC, and to support this, RISC OS 3 has been extended to allow monitor definitions to be customised - and to provide an easy to use (and understand) method of selecting the resolution (up to 1600x1200 with a suitable monitor) and the number of colours available to suit you at whatever time - unlike some systems it is not necessary to save or restart should you wish to change screen resolutions. RISC OS can take advantage of VRAM (dedicated Video RAM) if it is fitted to your Risc PC, and like practically all hardware upgrades the detection of this is automatic - you do not need to adjust jumpers on the board for this to work.

RISC OS's unique font handling allows typeset quality anti-aliased text at infinitely variable size positioned at any angle on the screen.

Eighteen high quality typefaces are supplied with the Risc PC along with symbol fonts. New fonts may easily be added, and these then operate seamlessly with the others.

High quality screen images demand high quality printed output. Here RISC OS scores again with true WYSIWYG (What You See Is What You Get). It is supplied with drivers for 54 different printer types, from simple monochrome dot matrix through to colour PostScript on laser printers and phototypesetters. You can have several drivers loaded at one time - choosing between them when the time comes to print is as simple as a mouse click. And with the correct driver for your printer loaded, RISC OS can take full advantage of the resolutions that your printer can offer. The excellent font handling of RISC OS is not held back by the availability of fonts on your printer - RISC OS can automatically download font information to printers where it is required.

File handling under RISC OS is extremely simple. It doesn't matter whether files are stored on a local hard disc, a floppy disc, a CD ROM, a network or other device, the interface presented to the user is similar. To an application it makes no difference on what physical medium data is stored - it handles it in the same way. Copying files between filing systems is trivial - imagine just "picking up" an icon representing your information from a window representing one system, "dragging it and dropping it" to another. This logical approach is also used by applications, and with a common set of data formats, data from one application may simply be used directly by another - so there is no need for compromise in selecting applications.

Being in ROM, RISC OS takes much less user memory - and time to start up - than other operating systems and GUIs which typically load from hard disc. As well as this, the resources offered to applications by the operating system make it possible to have fully functional applications consuming very little user memory and mass storage (disc space) - a particular benefit when sharing applications in a network environment, or when using Compact Discs.

RISC OS's unified approach to file handling makes working with networks very simple with your Risc PC. By addition of the appropriate expansion card, peer to peer networking (hard disc sharing) industry standard TCP/IP and Acorn's own Acorn Universal Networking (AUN) become instantly available. These are all compatible as far as the application writer is concerned, and simple to use for the user and network manager alike.

RISC OS provides a high quality application suite including a text editor, icon editor, music editor and vector graphics program as well as providing applications to provide for image processing and conversion from other formats and a number of games and diversions.

Finally, to make sure that you have something that you can use as soon as you unpack your Risc PC, Acorn provides several megabytes of data files covering tutorials, full-motion video files, music and over 100 high quality still images stored in a compressed form.

Technical details

Display:

- 1-24 bit support with transparency control for video overlay
- User defined screen mode and monitor types - supplied modes from TV to1280x1024
- Anti-aliased outline font manager providing fully scalable fonts at any angle on screen or printer with support for kerning

Sound:

- 8 channel sound system with selectable sample rate
- Wavetable sound synthesis

Printing:

- Support for many types of printers including PostScript , PCL and dot matrix / bit image (others, such as fax for suitable modems available from third parties)

Peripheral support:

Bidirectional fast parallel port

Serial port (up to 115kBaud)

Acorn 3-button mouse or serial PC compatible mouse

- DEBI expansion and compatible Archimedes podules

Memory management:

- ARM 600 family memory management support with 4K page size
- Applications provided protected independent memory starting at a consistent memory address
- Modular extensible operating system with module management for providing shared resources
- Applications can be decompressed at load time

Filing systems:

- ADFS (floppy disc and IDE hard disc - also providing support for reading MS-DOS discs)
- RAM filing system (user definable)
- Common filer approach for networks, CD, SCSI etc.
- Support for user-locking of hard disc

User interface:

- 3D look with anti-aliased typeface
- Consistent applications
- Co-operative multitasking
- Context dependent pop-up menus
- Icon bar providing immediate access to all loaded applications, filing systems, printers etc.

Supplied software suite including:

- Text editor
- Icon editor
- Vector graphics package
- Music package
- Many sample programs and datafiles

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

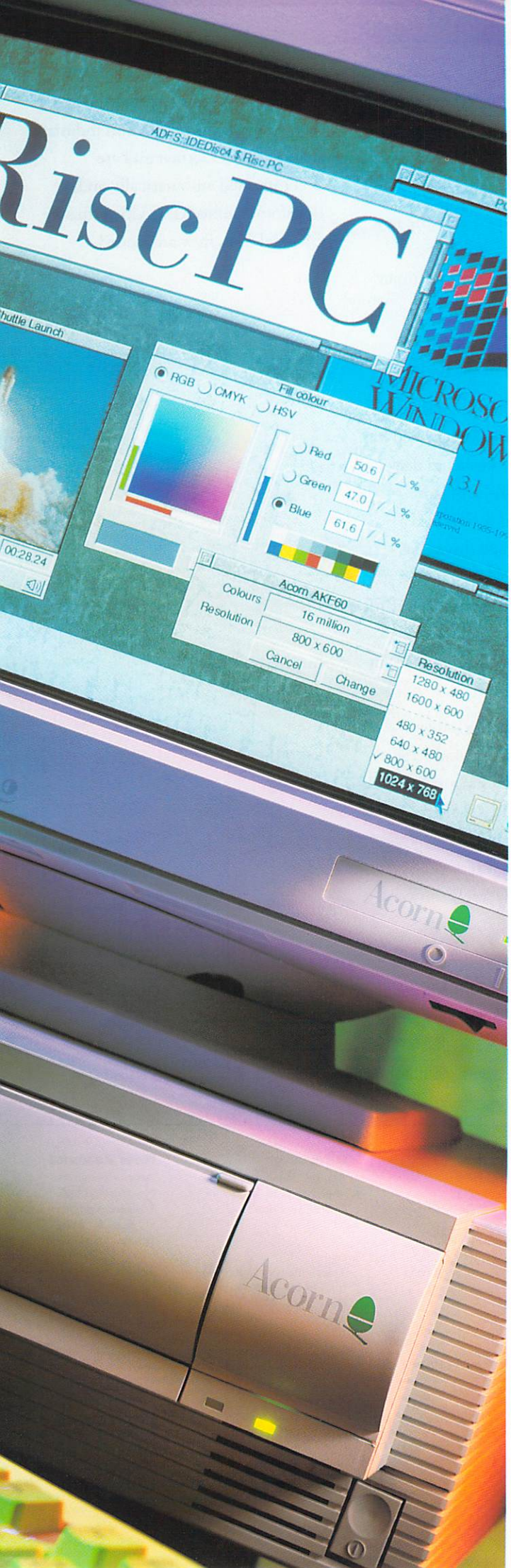
Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.
APP 705 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 19
RISC OS 3 Version 3.5 to 3.1 comparison

April 1994

RISC OS 3 has been extended to support the Acorn Risc PC and to take full advantage of the features its hardware offers: the result is Version 3.5.

The first thing you will notice about Version 3.5 is that it not only makes use of the NewLook 3D desktop, but adds a proportional font to the desktop, replacing the System font used previously.

A new Display Manager provides the user interface to the greatly enhanced video performance offered by the VIDC20 controller chip in the Risc PC, replacing the Mode option on the Palette icon in previous versions of RISC OS. You no longer have to remember screen modes: click on the Display Manager icon and you can set the number of colours you want and choose from the possible screen resolutions available. A new Colour Picker (described in *SVGA in 16 million colours* - data sheet 15) provides a standard way to choose colours across different applications, using three different colour models - RGB, CMYK and HSV.

The Apps icon still appears on the left-hand side of the icon bar and applications may still be loaded from here, although they are actually no longer in ROM in the Risc PC. As all Risc PC models are fitted with hard discs, it made sense to move applications there, and use the extra ROM space for the new features added to RISC OS. Because applications in the Apps directory are now accessed from the hard disc rather than the ROM, you can easily tailor the contents of the Apps directory to suit your own way of working.

Particular attention has been paid in the Risc PC to data security. The lockable case has been mentioned in *Versatile modular case design* - data sheet 14, and this

Acorn

protection extend to software as well. A new feature of RISC OS 3 Version 3.5 is FSLock - file locking - which gives you password protection for your data. Another module, VProtect (written by Pineapple Software), protects the computer from infection by viruses. If you are about to load a virus known about by VProtect, it halts the action and displays a banner giving you warning. A virus killer is available separately from Pineapple Software.

DRAM has increased dramatically from the 4MB of the A5000 to up to 256MB (+2MB VRAM) in the Risc PC. RISC OS has been extended to handle this greatly increased memory: Version 3.5 is capable of handling up to 256MB of RAM, once large enough SIMMs become available commercially.

In previous versions of RISC OS, memory management was divided between the kernel and the Wimp. The kernel ordered the memory into dynamic areas and an application space; the Wimp then used a free pool and multiple application spaces, rather than just one application space which had all spare memory in it. In Version 3.5, the free pool memory is managed by the kernel, and the Wimp manages the multiple application spaces; it is responsible for constructing and managing tasks in the desktop. The Wimp's operation is simplified, as it no longer needs to maintain its own free pool.

There is also full support for a second bus-mastering processor to access system memory co-operatively.

The serial and parallel device drivers have been changed in Version 3.5 to optimise their performance with the new hardware, the parallel device being capable of being opened either for input or output.

The speed of the Serial port has been increased to 115K baud in the desktop.

The Acorn keyboard interface has been removed from the kernel and replaced by a standard PC PS2-style keyboard driver as a separate module. The standard quadrature mouse driver is now also a module, and a serial mouse driver has been added to allow a PC-type mouse to be connected to the Serial port. You can now add your own driver modules to cater for a wide range of alternative input devices.

The Acorn Risc PC includes a new expansion card architecture, and RISC OS has been extended to support the new 32-bit wide data paths, 16MB address space for each card and a dedicated Network card interface. Acorn Universal Networking (AUN) software is provided as part of the operating system.

A number of new applications are bundled with RISC OS 3 Version 3.5, including ARPlayer to play Replay movies (plus four movies with wildlife and recreation themes) and over a hundred high-quality colour images. These images are supplied in industry-standard JPEG format and are decompressed automatically and transformed into RISC OS sprites by ChangeFSI as they are loaded.

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

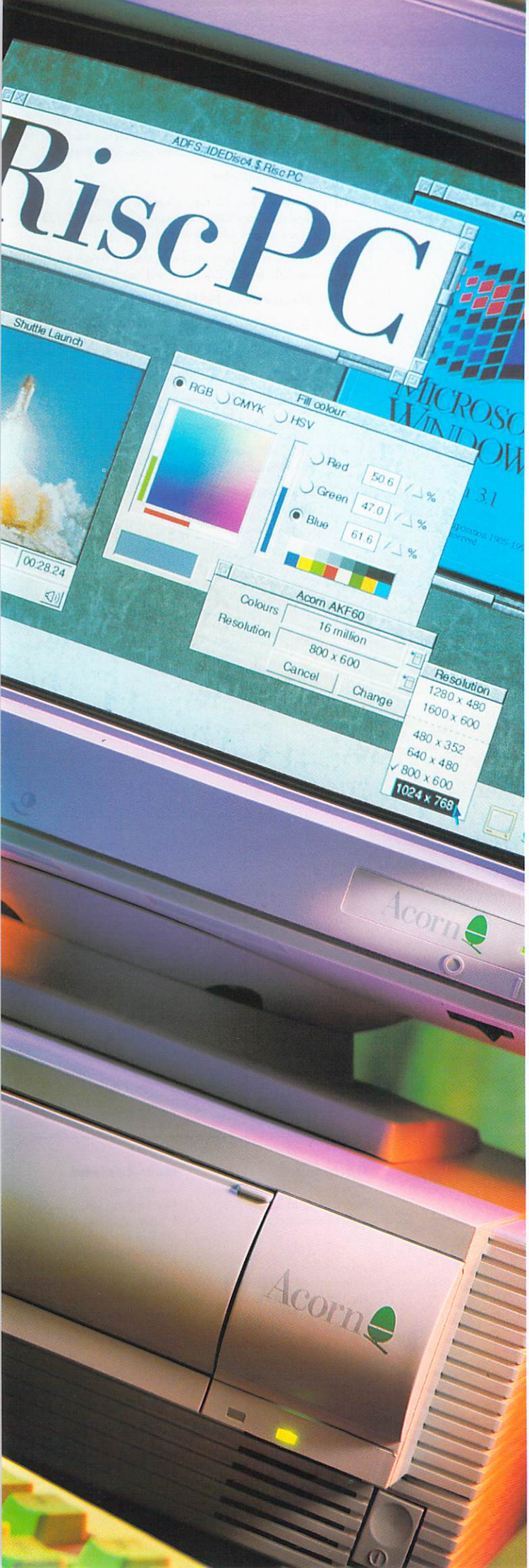
New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 704 FIRST EDITION APRIL 1994.



RISC PC

Data Sheet 20
Risc PC Series
Technical specification

April 1994

Acorn

SPECIFICATION - Risc PC 600

	Risc PC 600 2M HD210	Risc PC 600 5M HD210	Risc PC 600 9M HD420
Processor	30MHz ARM610	30MHz ARM610	30MHz ARM610
RISC OS version [10]	3.50	3.50	3.50
Main Memory	2MB	4MB	8MB
Expansion to [1]	256MB	256MB	256MB
Video Memory	0MB	1MB	1MB
Expansion to	2MB	2MB	2MB
Embedded Cache	4KB	4KB	4KB
Second Processor option	Yes	Yes	Yes
Processor upgrade [11]	Yes	Yes	Yes
ROM	2 MBytes	2 MBytes	2 MBytes
Disc drives			
Internal Hard disc	210MB	210MB	420MB
3.5" floppy disc (formatted)	1.6MB	1.6MB	1.6MB
Sound output			
Standard Audio	8 channel 8-bit log digital	8 channel 8-bit log digital	8 channel 8-bit log digital
Enhanced audio (opt)[2]	16-bit linear digital	16-bit linear digital	16-bit linear digital
Built-in mono speaker	Yes	Yes	Yes
Stereo output jack	Yes	Yes	Yes
Interfaces			
Fast parallel	Yes	Yes	Yes
High speed RS232	Up to 115 kbaud	Up to 115 kbaud	Up to 115 kbaud
Free expansion slots [9]	2x32-bit DEBI slots +1 network[3,4]	2x32-bit DEBI slots +1 network[3,4]	4x32-bit DEBI +1 network[4]
Free drive bays	1x5.25"[3,4]	1x5.25"[3,4]	2x5.25" 1x3.5"[4]
Desktop			
Maximum desktop colours	32 thousand [8]	16 million	16 million
Maximum colours	16 million	16 million	16 million
@ resolution	240x352 [5,7]	640x480 [7]	640x480 [7]
Maximum resolution	1600x1200	1600x1200	1600x1200
Colours @ maximum resolution	4 greys [6]	16 [6]	16 [6]
Monitors			
Standard Monitor	14" colour to 1024 x 768	14" colour to 1024 x 768	14" colour to 1024 x 768
Optional Monitor	17" colour to 1600x1200	17" colour to 1600x1200	17" colour to 1600x1200
Video controller	VIDC 20	VIDC 20	VIDC 20
Network options	Ethernet/Econet	Ethernet/ Econet	Ethernet/Econet
Application/Data on hard disc	over 45 MBytes	over 45 MBytes	over 45 MBytes
Power supply	70 Watts 110-240 VAC 50-60Hz	70 Watts 110-240 VAC 50-60Hz	103 Watts 110-240 VAC 50-60Hz
Dimensions	4.7"H x 15"W x 13.8"D	4.7"H x 15"W x 13.8"D	15"H x 7.3"W x 13.8"D
Number of case sections	1	1	2
Case material	ABS polycarbonate [12]	ABS polycarbonate [12]	ABS polycarbonate [12]
Warranty	12 months with on-site support *	12 months with on-site support *	12 months with on-site support *

KEY

[1] 2 memory sockets are provided. Each can take 2, 4, 8, 16, 32 or 64 MByte SIMM modules. Support is also provided for when 128 MByte SIMMs become available, enabling support for up to 256 MBytes.

[2] Available June 1994

[3] The Acorn 'Risc PC Case Upgrade' extends the expansion capability to 4 podules, 1 network, 2 5.25" drive bays and 1 3.5" drive bay.

[4] Third party products will extend this to 8 podules, 1 network, 4x5.25" drive bays and 3x3.5" drive bay

[5] Full screen Replay Full Motion Video display mode

[6] 256 colours when 2 MBytes VRAM option fitted

[7] 800 x 600 when 2 MBytes VRAM option fitted

[8] 16 million when 1 or 2 MByte VRAM option fitted

[9] Archimedes podule compatible

[10] Runs the vast majority of existing RISC OS software

[11] ARM 700 option due October 1994 and ARM 800 when available

[12] as used in the aerospace industry for its strength and lightness

* UK only

United Kingdom
Acorn Computers Limited
Acorn House
Vision Park
Histon
Cambridge CB4 4AE

Telephone (0223) 254254
Int +44 223 254 254
Fax (0223) 254262

Australia
Acorn Computers
Australia Pty Ltd
29 Cromwell Street
Collingwood
Victoria 3066

Telephone: (03) 419 3033
Int +61 3419 3033
Fax (03) 419 2892

Australia
Acorn Computers
Australia Pty Ltd
Unit 7, 190 George Street
Parramatta
New South Wales 2150

Telephone (02) 891 6555
Int +61 2891 6555
Fax: (02) 635 9641

Germany
Acorn Computers GmbH
Jürgensplatz 36-38
40219 Düsseldorf

Telephone (0211) 308 494
Int +49 211 308 494
Fax (0211) 394386

New Zealand
Acorn Computers
New Zealand Ltd
1 Ngaire Avenue
PO Box 26 - 287
Epsom, Auckland 3

Telephone (09) 520 4049
Int +64 9520 4049
Fax: (09) 520 3321

Acorn reserves the right to change the specification at any time. Every effort has been made to ensure that the information in this leaflet is true and correct at the time of going to press. However, the products described in this brochure are subject to continuous development and improvement and Acorn Computers Limited cannot accept liability for any loss or damage arising from the use of information or particulars in this leaflet.

ACORN and the ACORN logo are trademarks of Acorn Computers Limited.
ARM is a trademark of Advanced RISC Machines Limited.
All other trademarks acknowledged.
©1994 Acorn Computers Limited. All rights reserved.

APP 688 FIRST EDITION APRIL 1994.